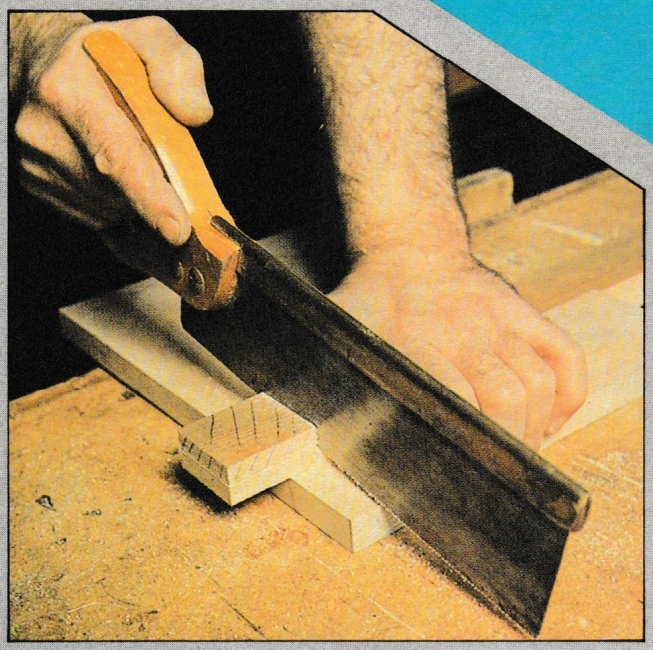
A Marshall Cavendish Publication in weekly parts

Part 19

THE KNACK

The complete manual of DIY skills, projects and home ideas



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THE KNACK

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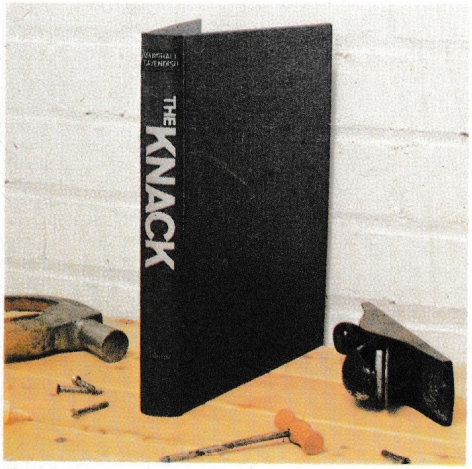

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Planning your garden

Getting the right mix of flowers, shrubs and trees in a house garden is no easy task. It is important to know exactly what kind of atmosphere you want before you start and then build up a design to suit the area available

Below: *A little flair and ingenuity can turn a concrete terrace into a colourful, decorative area where you can sit in peace and comfort. Pots of all shapes and sizes are used to hold a selection of flowers with a wall trellis for climbing plants*

Michael Warren

Home designer

Because a garden is a practical and visual extension of the house, it is logical to give its style and layout extremely careful consideration. The demands of a garden change with the family life cycle and at some time or another it will probably have to cater for a wide range of activities each requiring an allotted space and a particular design. If you want to include flowers, vegetables, shrubs, trees, a lawn, a terrace, and have privacy as well as children in your garden, achieving a balance is not entirely straightforward.

Of the various outside factors which affect the way you set about planning or replanning your garden, the most important is what exists there already. You may find you have to deal with a garden which has been totally neglected by former owners and you must decide how much effort you are willing to put in to changing it—a general overhaul is quite different from a new landscaping plan.

Another point to bear in mind is that climatic conditions, the location and the soil in your garden will influence the type and style of garden with which you end up. Certain flowers, plants and shrubs will be more suited to your particular conditions than others; if in doubt consult your local garden centre.

Finally there is the immediate environment of your garden. If you live in a town and are surrounded by houses or ugly industrial buildings it will probably be important to establish privacy and to try and blot out the worst of the views—high hedges, trees, fences and plant screens being the principal ways of doing this. With all these factors in mind, you can move on to establish the basics of style and layout. After this, there is no end to the visual interest and ornamentation you can achieve; and no space, however small or irregular in shape, need be a restriction.

Michael Warren

Above: *This elegant leisure garden with its secluded pond has been given extra privacy with a border of tall shrubs.* **Below:** *A pergola with climbing plants provides a peaceful, shady nook for hot summer days*

Determining the style

The visual and practical link between the house and outside is of great importance in determining the style of the garden.

Your first task is to recognize the style of your house. Take careful note of the building materials used: if concrete and bricks are the main elements, you can establish a sense of unity by incorporating these materials in the garden for walls, terraces and paths. On the other hand a cottage or rustic-styled house looks wrong with a predominance of brick or concrete in the garden, however cheap or available these materials may be. A house with a good deal of timber in the structure looks better with timber fences and a timber-framed greenhouse or shed.

The style of the garden depends

also on its surroundings and in a residential area, it pays to blend in your garden to some extent with those around you. Shock-tactic contrasts are seldom successful.

The interior of the house is another major consideration: as the garden is a physical extension of the house, it should in some measure harmonize with it. A cottage with small rooms and picturesque furniture and accessories does not look right with large terraces and a geometric layout; instead it demands a more ornamental approach with natural stone and perhaps an area of rockery.

By the same rule, asbestos plant pots look out of place in the garden of a traditional brick house. The more modern interior is better complemented by a streamlined type of garden with the architectural use of plant materials, terraces and paths.

But whatever the style, remember that it will be influenced also by any long-established features such as a break in the level of the plot or a group of trees. Such features tend to serve as indicators of the way a garden will be laid out. They point to whether it requires an open, spacious aspect with a sweeping lawn and herbaceous borders or whether it is more suited to intricacy, cobbles, shrubs and ornamentation. A heavily featured garden might even look in style completely paved over with raised beds and trees highlighted in the artificial surroundings.

Design and layout

Taking style and outside factors into account, the design and layout is going to depend on what you want your garden for—growing flowers, growing vegetables, relaxing, sunbathing, an outside dining area, a children's play area, or a combination of all these.

You must consider also how much terrace you need, how much of the garden you require for vegetables and herbs, how much lawn you want in relation to flower beds and where to site such service areas as sheds, greenhouses and water taps—not to mention special requirements like an enclosed play area, a sandpit, pond or colourful rockery.

Careful planning with the aid of squared paper is essential for roughing out your ideas to get a guideline for shaping and proportioning the plot. But before doing this consider the various possibilities that concern each type of garden and some of the many types of materials and plants you may require to keep it at its best.

Michael Warren

Above: *Make the front garden a showpiece for your home with splashes of colourful flowers and let one colour dominate for extra effect. For instance, these brilliant red salvias provide a dramatic display*

The front garden

This needs particular attention in terms of the overall style of the house. Front gardens tend to be showpieces or, at the very least, areas which introduce the visitor or passer-by to the individuality of the house. Most front gardens are too small to use as anything more than a decorative frontage. Nothing looks worse than a bare, shabby area or one that clashes in style with the house itself.

In small, terraced houses the front area often comprises a single brick wall hiding a place to keep dustbins. But even this can be made attractive: you can place window boxes on the front window sills, establish creepers such as clematis, ivy, virginia creeper and honeysuckle on the walls and set a run of flower boxes along the front wall. To increase the exterior greenery still further, plant hardy shrubs—many of which are colourful and need little attention—in one corner. Altogether, these effects give an urban terraced house a very pleasant cottage-like appeal.

Larger front gardens can be used as children's play areas if you want to use the main garden for your own purposes. In this case, you must pay particular attention to the safety factor of the enclosed area: make walls and hedges high enough to keep in children and fit a secure gate.

Another possibility is to pave the area completely and use it as a place to tinker with cars and motorcycles, or for other practical outdoor activities such as carpentry or the odd painting job the handyman might embark upon.

On more conventional lines, the front garden can go a long way towards setting up the atmosphere of privacy—with high hedges or young saplings on the front border. And, for the green-fingered, the area can greatly enhance the look of the house if it includes a rose bed or two or a bed of colourful flowers.

The flower garden

The garden given over solely to attractive plants and flowers is not for those who dislike gardening. But is a good choice for the keen horticulturist who has only a small garden area; a restricted space does not deny the effect of a profusion of flowers if the garden is properly planned. A few beds assymetrically or geometrically arranged around a small lawn is both practical and attractive, because the flowers and plants themselves make the layout unique.

A flower garden should not normally have a large terraced area but there ought to be some hard surface—such as a path or a narrow terrace—at the back of the house next to an outside tap for use as a solid base on wet days. If there is room, a squared island terrace jutting out from the back of the house will give you a base to sit on warm summer days to enjoy the view of the flowers.

If the design of the garden is to be wholly successful the planting should be worked out as carefully as the layout. There are three basic levels for planting design. The first is the sculptured level with larger plants and shrubs taking up dominant positions; the second level provides the bulk of garden planting including grass and small shrubs against which the third level, the decorative element, is set.

It is particularly important in the flower garden to remember the background effect created by such plants as evergreen shrubs.

But try not to overburden the borders of the garden with high hedges and greenery, as this detracts from the decorative effect of the flowers and restricts the amount of light coming into the garden.

Try to find room for a garden tool shed and possibly a greenhouse within the design. Sheds are best tucked away into corners and made accessible by means of natural stone pathways, paved or even cobbled paths.

The site of the greenhouse will depend to some extent on what you use it for. If you intend growing attractive hot plants such as orchids you might want to bring the greenhouse forward into the visual scheme of things; but if you use it for experimental growing a site at the end of the garden might be more suitable.
be more suitable.

The vegetable garden

Even in a small garden it is possible to be self-sufficient in flowers and fruit to a fairly large degree. The emphasis should be on practicality and accessibility: allowing yourself enough beds or plot space to work a seasonal rota of growing.

The traditional area for vegetables is at the end of the garden, screened off by a trellis. But nowadays the high price of fruit and vegetables often makes the vegetable garden the central part of the garden layout. In this case, their conspicuous position demands that you grow them in as neat and attractive a form as possible. Give the visual appearance of the garden as much consideration as the productivity of what you are growing.

In a small square, or average-sized rectangular garden, a good functional layout is to have three vegetable areas intersected by pathways with the fourth quarter given over to a terrace for a timber-frame garden shed housing essential tools.

You can then plant espaliered fruit trees such as plum, apple and pear around the borders and turn over spare areas at the back of the house to potted strawberries. In cold climate districts, plants such as gooseberries and currants grown fan-like on walls take up little room and are both attractive and productive.

In terms of visual appeal, a combination of herbs and vegetables provides interest throughout the year. Remember that many of these can be grown intensively in containers or raised brick boxes which serve to ornament the garden. Fruit trees also double as decorative plants—especially if you consider the merits of apple and cherry blossom, or grape vines draped around a pergola.

As with flowers, light is important to the appearance and productivity of vegetables so keep their plot as much to the centre as possible.

Above: *Shrubs and borders of varying heights give a most effective, sculptured look when used together.* **Right:** *Small gardens come to life with short and tall plants in many colours*

The leisure garden

Designing purely for peace, privacy and leisure—with space to sunbathe, eat and give the children free rein—allows a great deal of scope. For a start, it is a good idea to incorporate a large area of terrace—which need not

be in one block—especially now that the range of stone flooring, concrete paving and brickwork is so wide and varied.

A combination of terrace, lawn and herbaceous borders with a good deal of shrubbery and the odd tree, is ideal for the leisure garden. But the prime consideration should be the bordering hedges, fences or walls. For extra privacy you can build up small neighbouring walls, either with more of the same brick or by adding a stretch of louvred or interwoven wooden fence to the top of them.

Plenty of shrub and tree foliage is the natural way to increase the sense of isolation and privacy, but a wooden-framed pergola extending over the terrace at the back of the house goes even further. Such a framework should be distinct and simple, and the wood need not necessarily be of the highest quality to be adequate. With a profusion of climbing plants around it, blossoming overhead in spring, a pergola provides an attractive, shady sitting area, a place to eat out of doors or leave a pram on warm, sunny days.

If you are thinking in terms of a play area for the children, a terraced area surrounding a central lawn with a built-up sandpit situated accessibly on one side is a practical answer. This gives the children a circuit for riding tricycles while you have the lawn to yourself for sunbathing.

On more geometric lines, you could extend the terrace down one side of the garden and inset a shallow paddling pool and a sandpit with the rest made over to a lawn and attractive flower border.

The leisure and play garden tends to be one which requires little maintenance, but you could lessen the amount of work even more by concentrating less on flowers for decoration and more on shrubs and trees. There are several hardy, attractive shrubs—rhododendrons, camellias, azaleas, bush roses, lilacs and tree peonies, to mention but a few—which look ideal in eye-catching positions. And once planted, they can be left largely to themselves.

Likewise, trees are most obliging plants: they live longer and grow larger than other plants, they give shade, screen you from neighbours, provide fruit to eat, flowers for decoration and grow while you sleep—sometimes surprisingly quickly. Trees in a new plot, if you choose the right kind, can give the appearance of maturity within only a year or two.

The all-purpose garden

This type of garden, which incorporates something of all the other types, requires a very carefully worked-out balance. To start with, it is probably best to relegate the vegetable garden to its traditional place at the end of the garden and grow a small hedge or build a fence to screen it from the rest. Remember, too, that the garden lawn is usually the dominant feature and that it must be in proportion to the other areas: a small lawn will be incongruously overwhelmed by a large terrace—it is far better the other way round.

In long, narrow plots or awkward L-shaped gardens the shapes lend themselves to the division of the garden into separate areas—often a necessity in the all-purpose garden. It is even possible to accentuate the

Michael Warren

Harry Smith

Michael Warren

Jessica Strang

Above: *A monochrome garden using a variety of interesting shapes and textures is an effective alternative to the colourful flower garden.* **Below:** *Add charm and character to a town house entrance with a selection of plants in pots and window boxes to simulate a garden*

individual areas by dividing them off with hedges, bamboo thickets or saplings so that each can be given its own particular style.

But a more flowing layout could be adopted in a small square garden, perhaps by having a central lawn surrounded by flowers, shrubs, trees and vegetables with the vegetable area occupying a slightly elevated section.

If you have room for a lily pond or fish pond you will find the effects particularly worthwhile: plants and flowers grow in profusion around ponds because they benefit from the reflected sunlight. And like a sandpit, a statue or a tree, a pond provides a highlight for the garden and leads the eye in a particular direction.

Remember that the most important unifying factors in the all-purpose garden are the materials used for partitioning and paving. Get these right and even the most varied garden can be prevented from looking too 'patchy' and untidy.

Terraces and fences

When you terrace an area it is best to use a stone, concrete slab or brick that suits your house and its location. Local stone in country areas is worth searching for despite its comparative expense. Brick houses can often take a warm-coloured local stone or brick placed side-on as a terrace and even rather bland concrete can sometimes look good.

Concrete for walls and paving is probably most suited to the garden of a modern house while for a house with delicate features, internal hedges and wooden fences are a good choice—and wooden fences are by far the easiest to erect yourself. You can even carry a bordering palisade fence into the garden to form a wrap-around compost heap.

Brick walls can be matched with brick paths and terraces, arranged in herringbone, diagonal or circular patterns. In the same way, concrete or stone slabs can unify an area if you inset them in the border of the lawn as a path or a pattern. All these materials should be used with three important purposes in mind: to establish the different sections, to lead the eye, and to give continuity of theme to the garden.

Making a plan

Once you have weighed up all the various factors and decided exactly where your needs lie, it is a good idea to make a scale plan of the proposed layout on graph paper.

Start by measuring up the garden and marking this in outline. Follow with the positions of all the immovable objects such as trees, humps, and depressions.

After this, you can start to plot in your proposed features—flower beds, the lawn, paths, terraces. As you make each addition, stop for a moment and think carefully whether it fits in with the rest of the house.

For example, a sunbathing patio will be of no use if it is overshadowed for most of the day. Nor will the children's play area be very safe if you cannot see it from the kitchen or living room window.

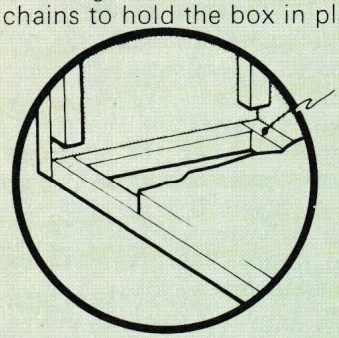
Finally, remember that if you try at every turn to make your garden both a physical and practical extension of your home, you can be sure of the very best results.

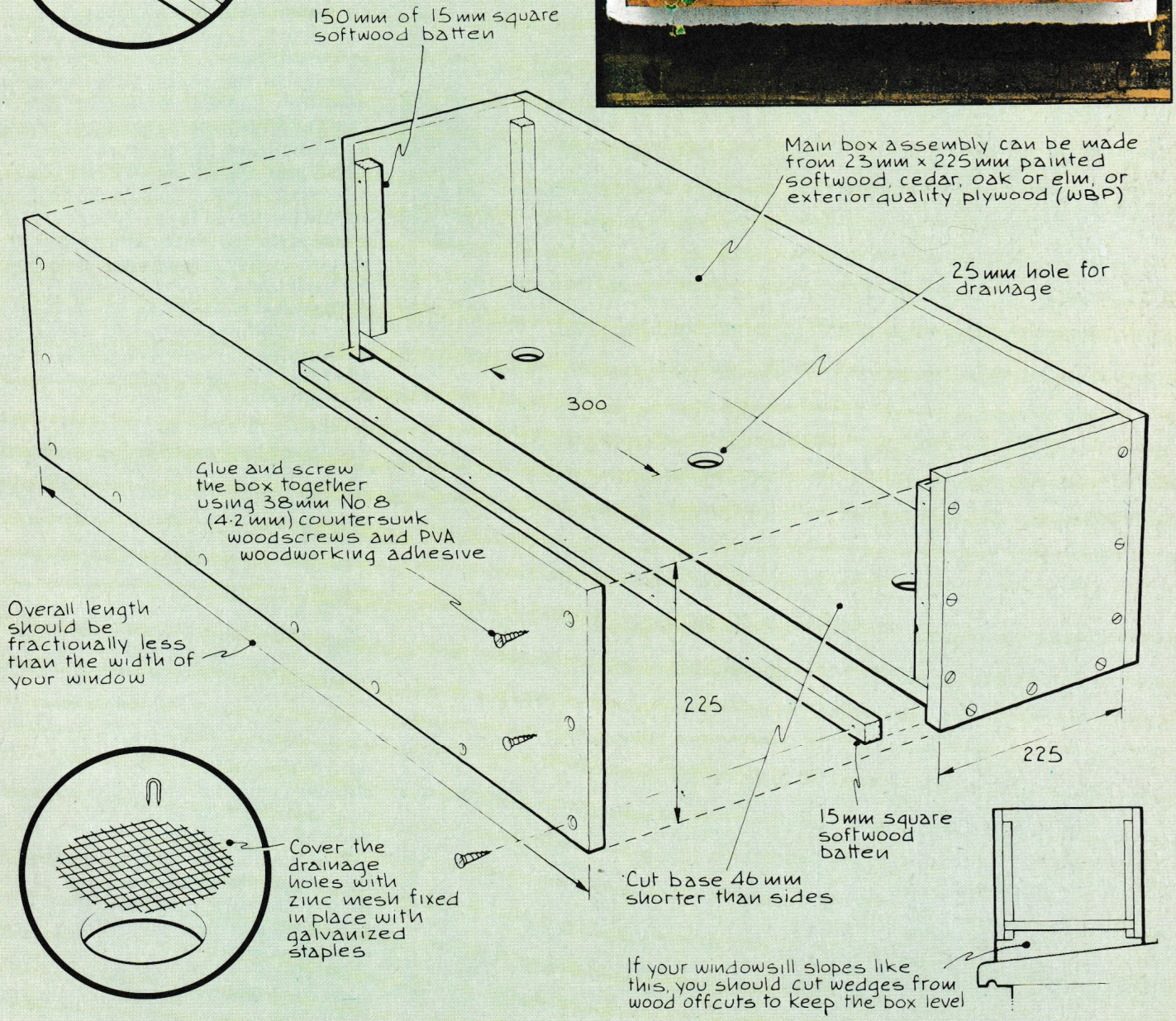
Make a window box

Even a city outlook becomes rural when you bring the garden up to your window sill. Make this simple window box as the basis for a miniature garden.

The most durable timbers are cedar or oak. Ordinary softwood can be used but will need painting as protection against the elements. Do not omit the drainage holes as these are essential for healthy growth. If your sill slopes, fit wedges as shown. In all cases, you should fit safety chains to hold the box in place.

Simon Butcher




150 mm of 15 mm square softwood batten
Main box assembly can be made from 23 mm x 225 mm painted softwood, cedar, oak or elm, or exterior quality plywood (WBP)
25 mm hole for drainage
300
Glue and screw the box together using 38 mm No 8 (4·2 mm) countersunk woodscrews and PVA woodworking adhesive
Overall length should be fractionally less than the width of your window
225
225
15 mm square softwood batten
Cut base 46 mm shorter than sides
Cover the drainage holes with zinc mesh fixed in place with galvanized staples
If your windowsill slopes like this, you should cut wedges from wood offcuts to keep the box level

Advertising Arts

Elegant built-in wardrobe

This wardrobe has plenty of hanging space, a drawer unit and two storage compartments—yet you can build it into an alcove so it takes up very little room. Decorative mouldings add style to the door panels

David Jordan

Built-in furniture is a classic way to save space and on construction. This wardrobe is designed to fill the dead space beside an old fireplace, giving you the maximum of storage space for the minimum intrusion into the room. If you have no convenient alcove, you can use the same construction to build a wardrobe in a corner of the room.

The main material for the carcase and the doors is veneered chipboard. The picture shows a wardrobe made from pine finished melamine-faced chipboard, but you can use whatever finish you prefer. The page opposite shows some alternative ideas.

Support the chipboard panels on softwood frames. You can screw these directly to the walls, eliminating the need for complicated support framing. One of the most important points about building-in furniture is that the space you are filling will very rarely be exactly square. This means that you should be careful to take your measurements from the walls, and be prepared to adjust your framing to compensate for variations.

You may have to scribe the panels to fit a non-linear wall. The techniques for scribing curves correctly to fit are described in the carpentry course, chapter 15.

When you come to panelling, these variations may mean that you have to shape some of the panels as well. The design shows one solution; using infill panels made from plywood to fit round complicated mouldings. You can also use infill panels to adjust the width. Chipboard comes in standard width panels, and you may find that, for example, the doors would have to be too wide to cut from a standard board and uneconomic to cut from a large sheet.

One other solution to the problems of non-standard sizes is shown here, where the ceiling is too high for a standard length board. Join two boards as shown, and cover the crack with a decorative moulding.

Use mouldings again to give an interesting finish to doors and hinged flaps. Choose a matching timber, or even a contrasting colour for a really striking effect.

Melamine needs no surface treatment—you should lacquer wood veneer and any wood mouldings you fit.

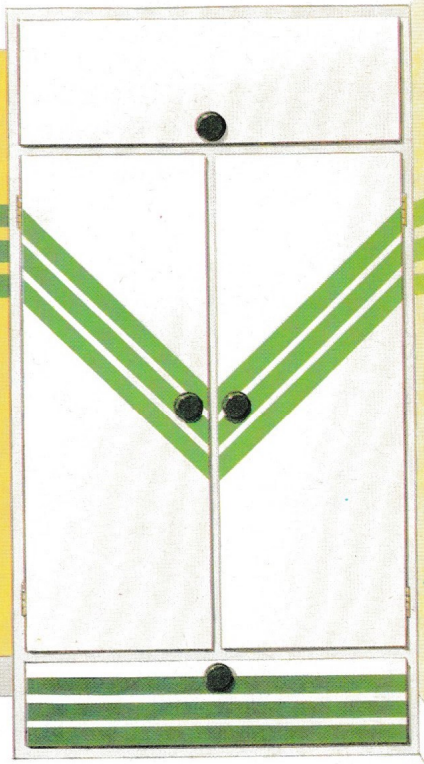
Alternative ideas

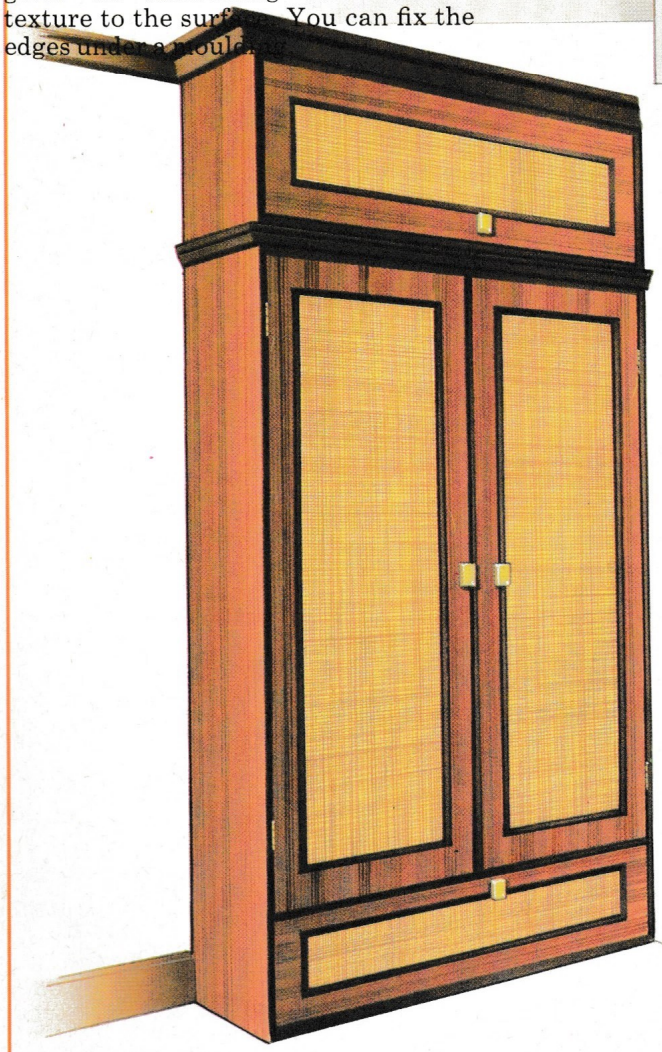
It is easy to adapt this type of framed and panelled construction to almost any style — simply by choosing a different material for the panels. This page shows just a few of many possibilities.

An obvious choice, particularly for bedroom furniture is white melamine-faced chipboard. This too can be trimmed with decorative mouldings and you can buy these in plastic to match the melamine.

Mirrors can make a small room look larger, and they can help to make a wardrobe really unobtrusive. If you just want the mirror for dressing, or do not want the expense, simply fit a smaller mirror inside one of the doors using mirror clips.

One way to give a different look to chipboard is to cover it. Here, hessian gives an interesting and unusual texture to the surface. You can fix the edges under a moulding.



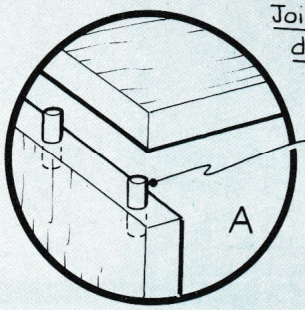


Nigel Osborne

Workplan

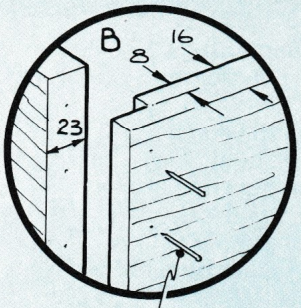
David Jordan

Joining the corners of the drawer unit

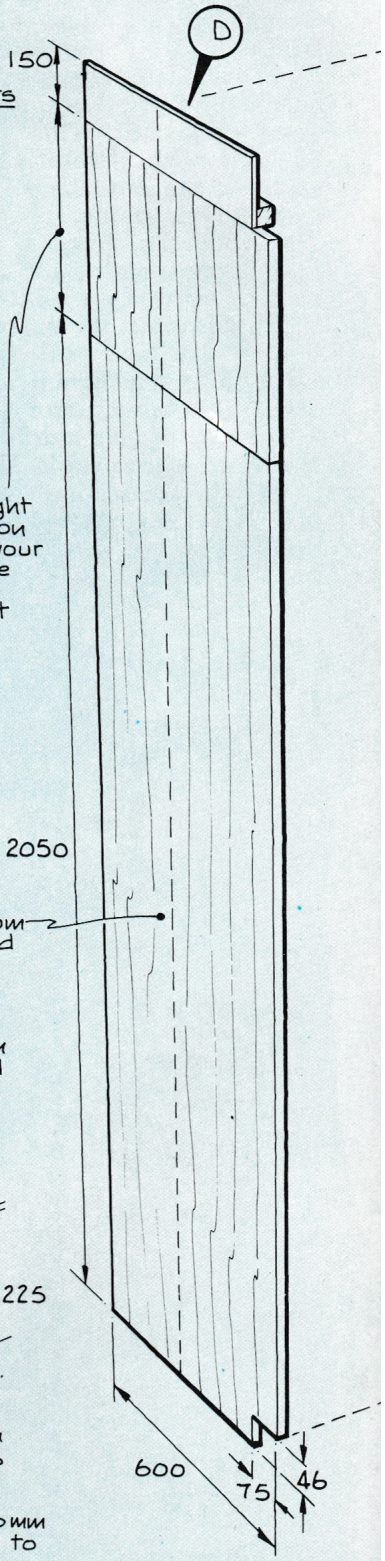


20mm × 6mm dowels at 100 mm centres. Assemble with PVA woodworking adhesive

Assembling the drawer fronts

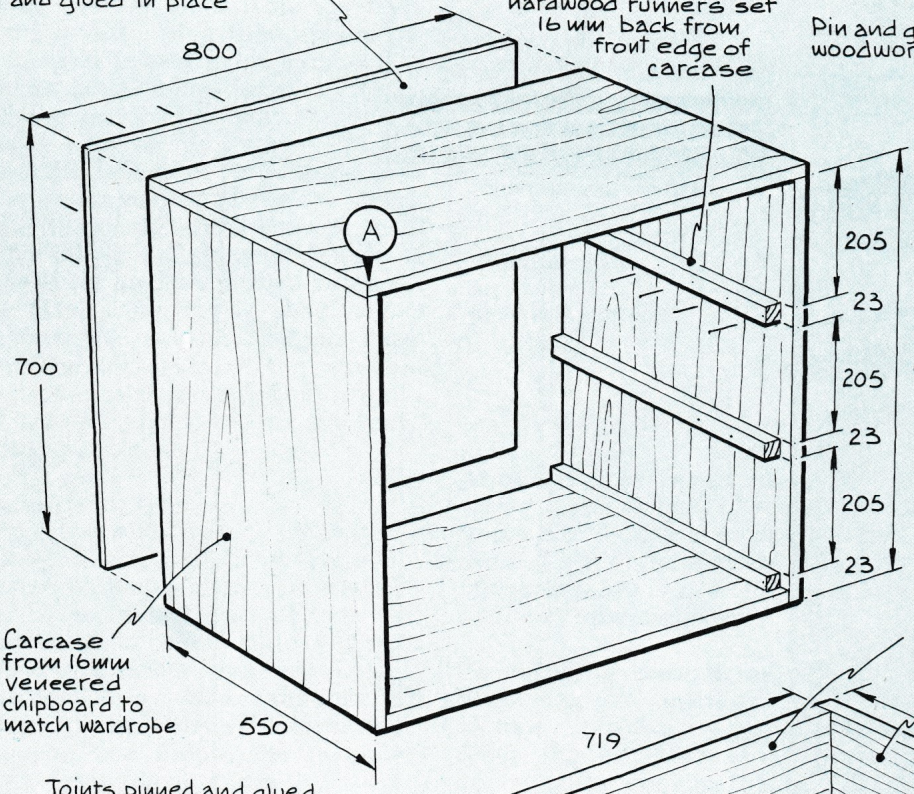


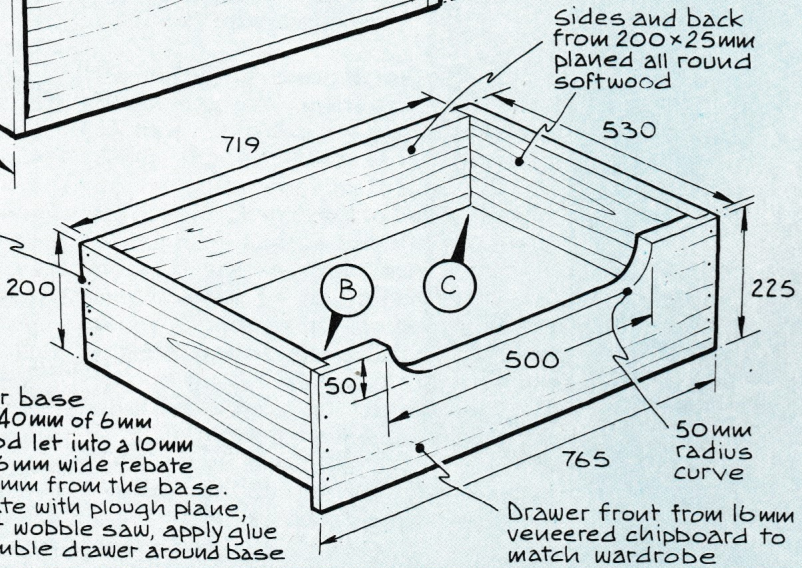
Pin and glue with PVA woodworking adhesive

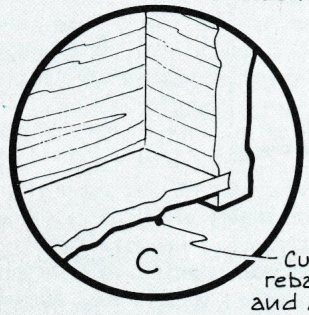


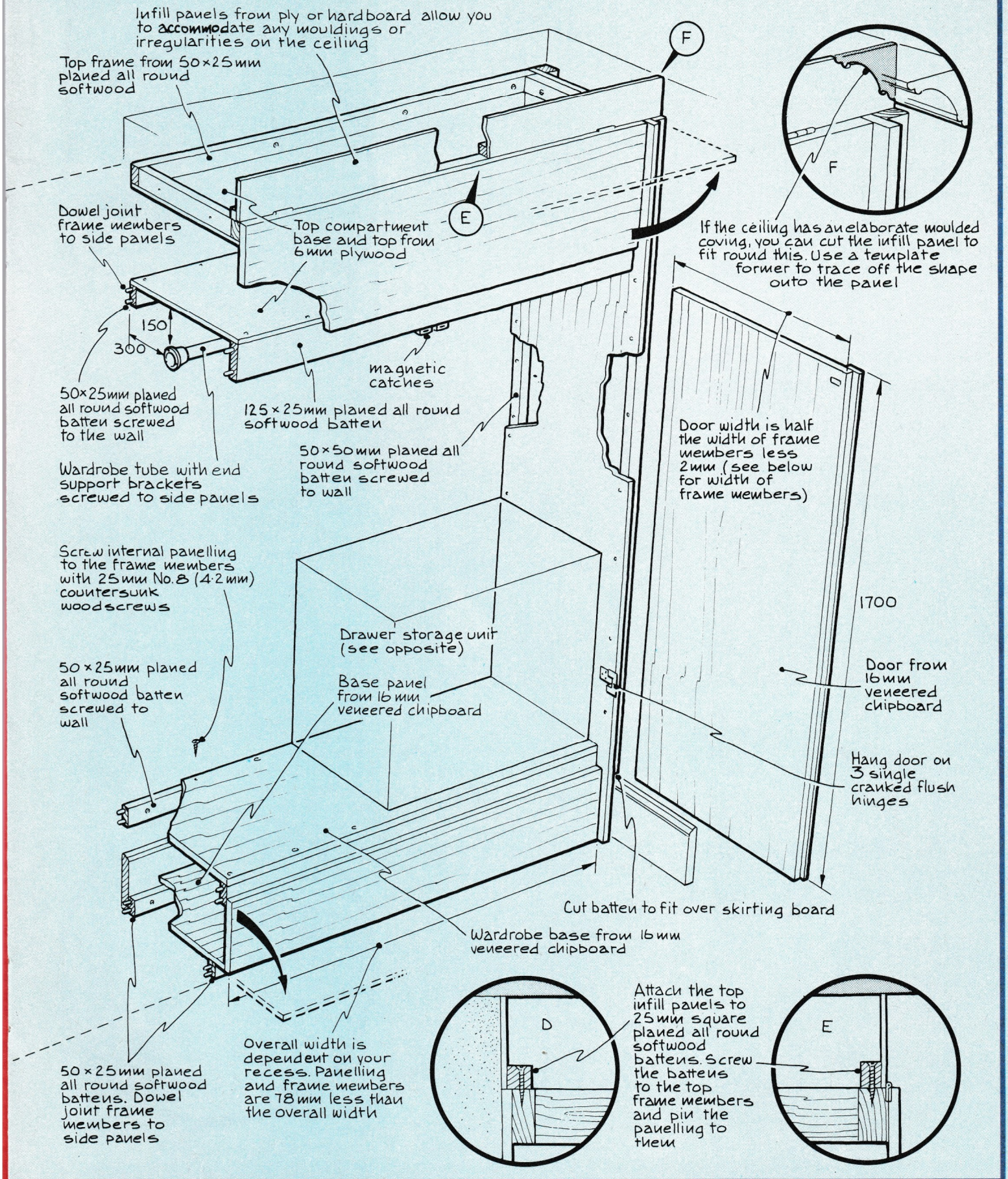
As overall height is dependent on the height of your room, it will be necessary to vary the height of the top cupboard to adjust this

Side panel from 16 mm veneered chipboard



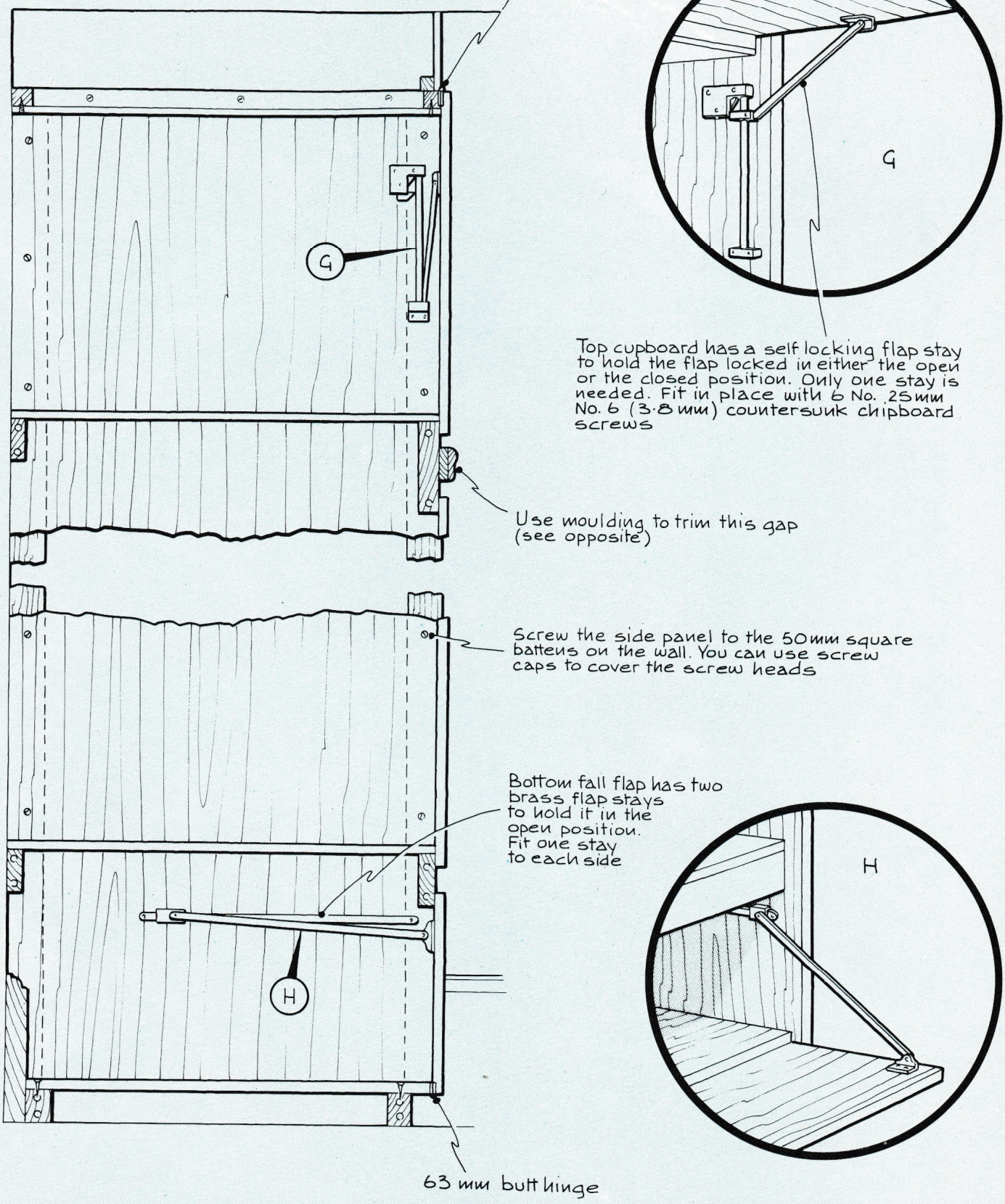



Joints pinned and glued with PVA woodworking adhesive
C
Drawer base 720×540mm of 6mm plywood let into a 10mm deep 6mm wide rebate cut 10mm from the base.
Cut rebate with plough plane, rebater or wobble saw, apply glue and assemble drawer around base

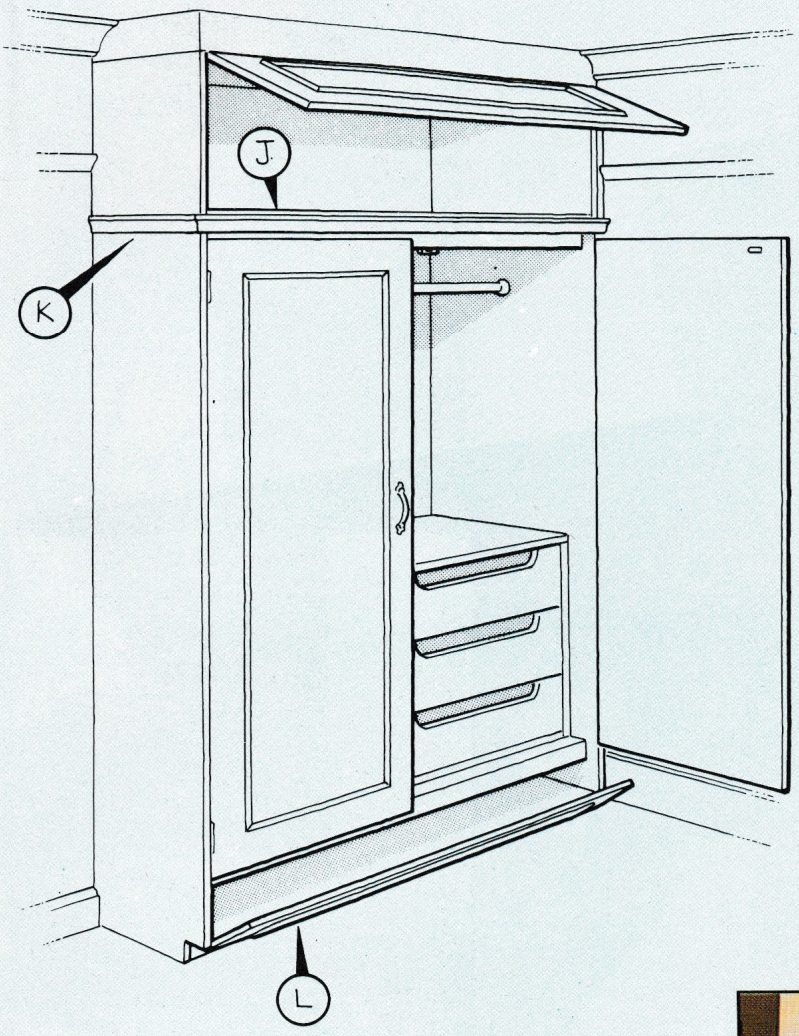

Infill panels from ply or hardboard allow you to accommodate any mouldings or irregularities on the ceiling
Top frame from 50×25mm planed all round softwood
F
E
Dowel joint frame members to side panels
Top compartment base and top from 6mm plywood
150
300
50×25mm planed all round softwood batten screwed to the wall
Wardrobe tube with end support brackets screwed to side panels
magnetic catches
125×25mm planed all round softwood batten
50×50mm planed all round softwood batten screwed to wall
If the ceiling has an elaborate moulded coving, you can cut the infill panel to fit round this. Use a template former to trace off the shape onto the panel
Door width is half the width of frame members less 2mm (see below for width of frame members)
1700
Screw internal panelling to the frame members with 25mm No.8 (4·2mm) countersunk woodscrews
Drawer storage unit (see opposite)
50×25mm planed all round softwood batten screwed to wall
Base panel from 16mm veneered chipboard
Door from 16mm veneered chipboard
Hang door on 3 single cranked flush hinges
Cut batten to fit over skirting board
Wardrobe base from 16mm veneered chipboard
Overall width is dependent on your recess. Panelling and frame members are 78mm less than the overall width
50×25mm planed all round softwood battens. Dowel joint frame members to side panels
D
Attach the top infill panels to 25mm square planed all round softwood battens. Screw the battens to the top frame members and pin the panelling to them
E

Advertising Arts

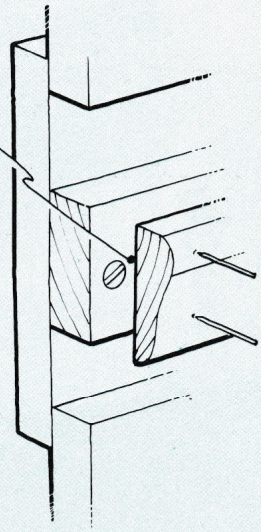
Fitting the top and bottom flaps


63mm butt hinge
G
Top cupboard has a self locking flap stay to hold the flap locked in either the open or the closed position. Only one stay is needed. Fit in place with 6 No. 25mm No. 6 (3·8 mm) countersunk chipboard screws
Use moulding to trim this gap (see opposite)
Screw the side panel to the 50mm square battens on the wall. You can use screw caps to cover the screw heads
Bottom fall flap has two brass flap stays to hold it in the open position. Fit one stay to each side
H
63 mm butt hinge

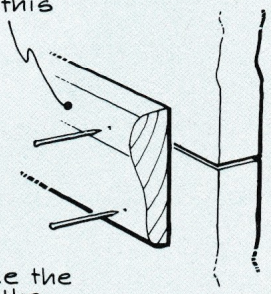
Finishing details



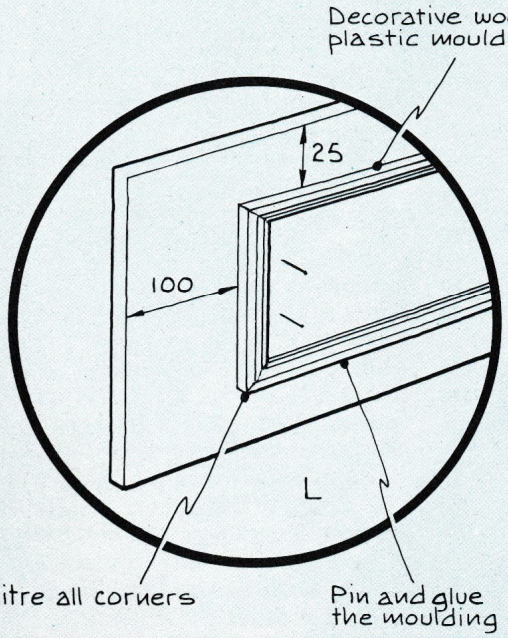
To trim the panel between the top lift-up flap and the doors, use a wooden moulding. Fit a batten as shown to bring this up to the level of the doors, then pin and glue the moulding in place

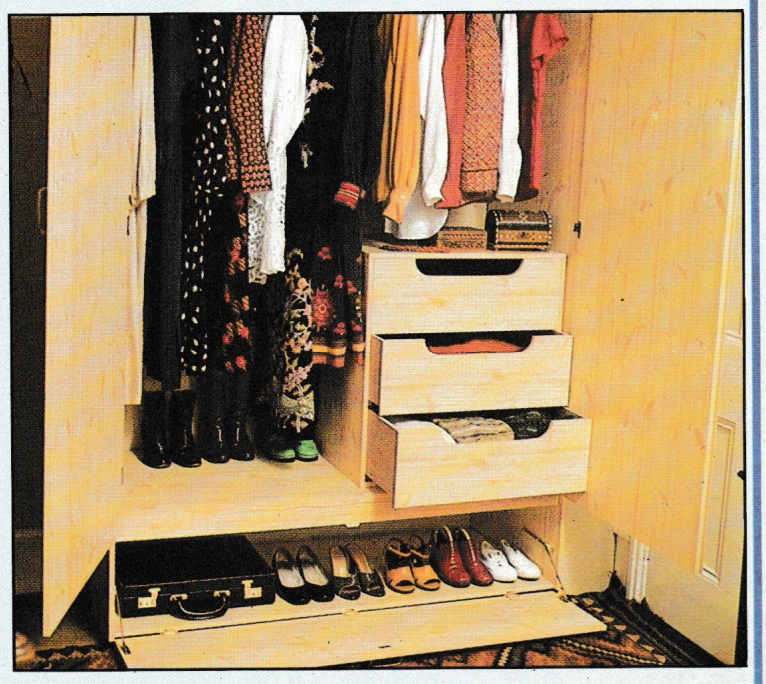


If you have a very tall room, you may not be able to make the side panels of the wardrobe out of one standard length board. If you have to make a join, you can cover this with moulding pinned and glued in place.

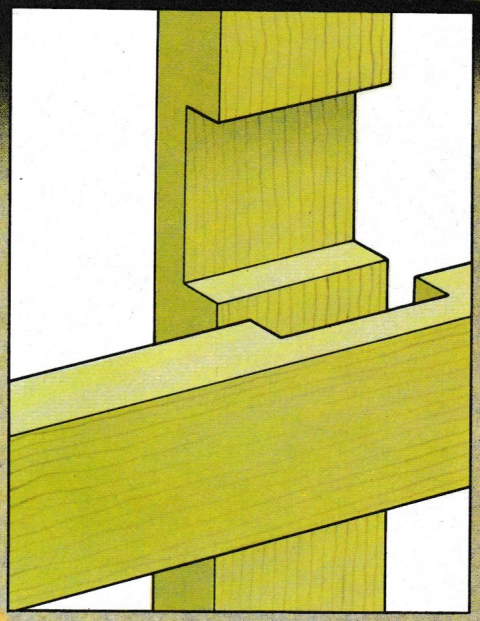


You should make the join align with the moulding on the front of the wardrobe





Advertising Arts

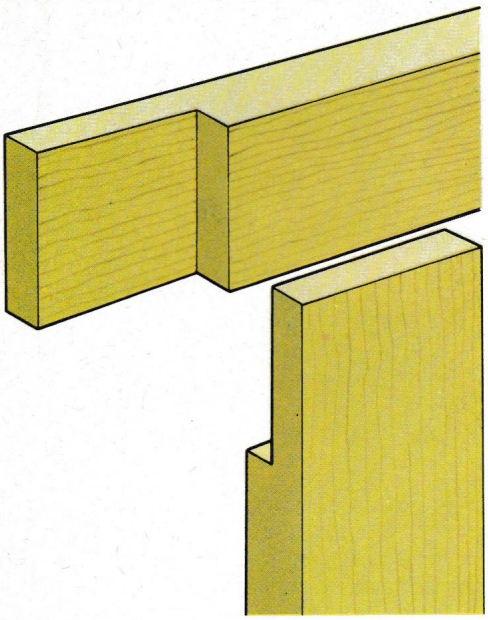


A. *The cross halving joint is used to cross two members without increasing the thickness*

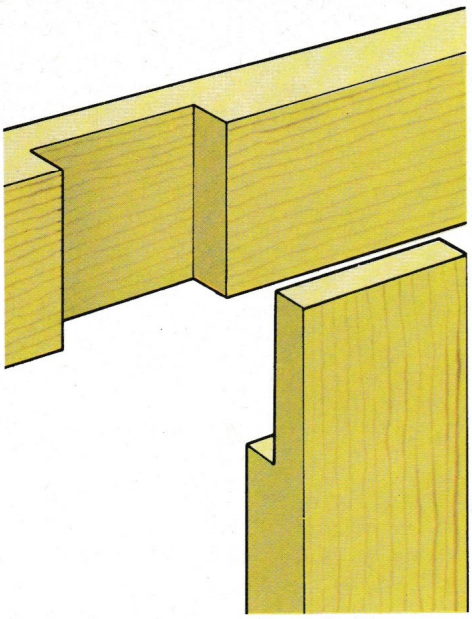
Making halving joints

● Uses for halving joints ● Cross halvings ● Tee halvings ● Dovetail halvings ● Corner halvings ● Marking, cutting and assembling a tee halving joint ● How to make a dovetail halving

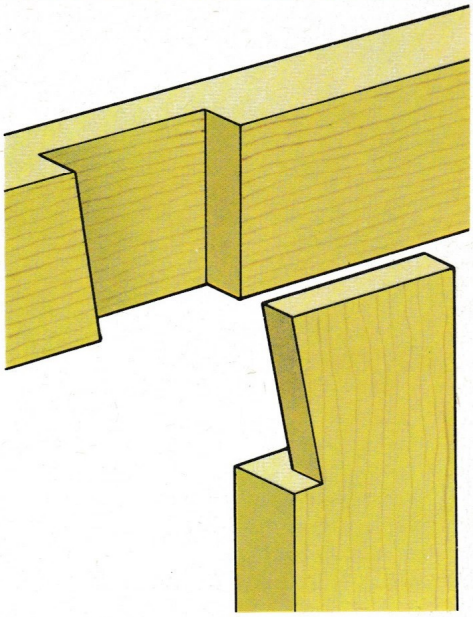
Ray Duns



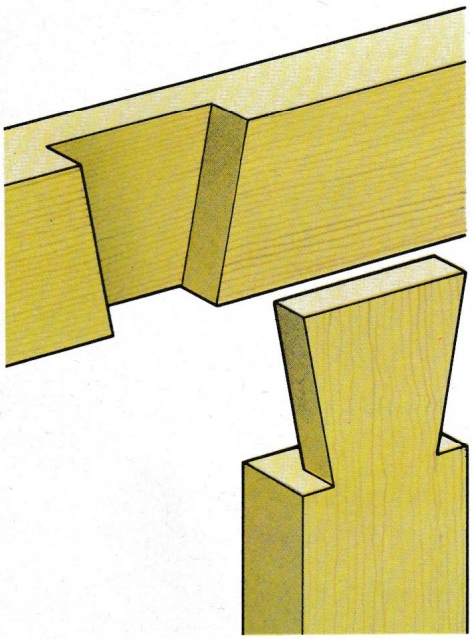
B. *The corner halving is used where two members meet at their ends*



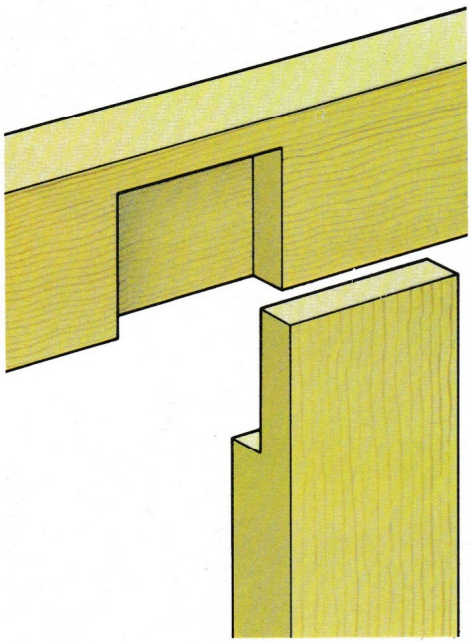
C. *The tee halving joint consists of a pin and a socket*



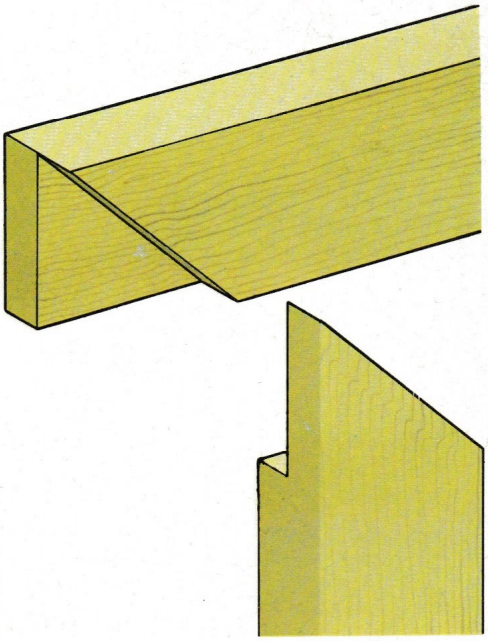
D. *A stronger tee halving is made by sloping one edge to form a shoulder*



E. *In the dovetail halving, both of the edges are sloped*



F. *A stopped tee halving produces a neat finish to the work*



Bernard Fallon

G. *The mitred corner halving can be used if the surface is to be moulded*

The halving, or half-lap joint—one of the most versatile woodworking joints—is used in all kinds of framework from delicate side tables to a full-framed timber building. So, for building hardwood and softwood frames or repairing damaged timber around the house, a practical knowledge of halving joints is a real asset.

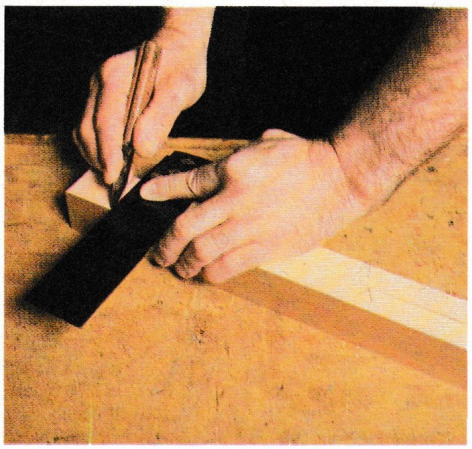
Halving joints are so-called because both members of the joint are halved in thickness so that the faces of the finished assembly are flush with one another. There are three basic types of halving joint: the tee halving, the cross halving and the corner halving.

The tee joint is often used in cabinet framework where the end of a rail meets another piece some distance from the end (fig. C). To produce a neat finish, the joint can be stopped—cut short of the cross-piece of the 'T'—so that the outside edge does not show the end grain. But a stronger joint is made if one of the edges is sloped to provide a shoulder, so that the two members can be separated in one direction only (fig. D).

Alternatively, both edges can be sloped to produce a dovetail halving joint (fig. E). This type of joint is often used as an intermediate rail on a long table to prevent the sides from bowing.

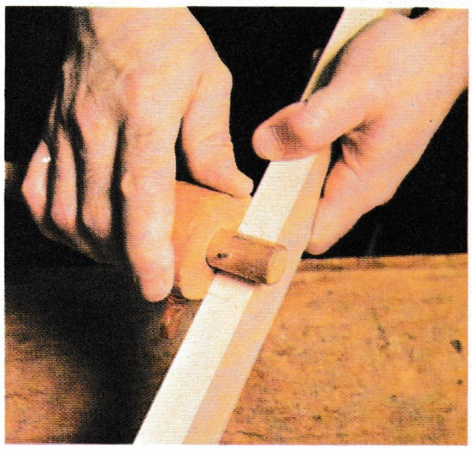
The cross halving is used where two members have to cross each other without increasing the thickness of the frame, such as in the diagonal stays of tables and chairs (fig. A).

The corner halving is used where the members meet at their ends, for example the corners of a rectangular frame (fig. B). A mitred corner halving



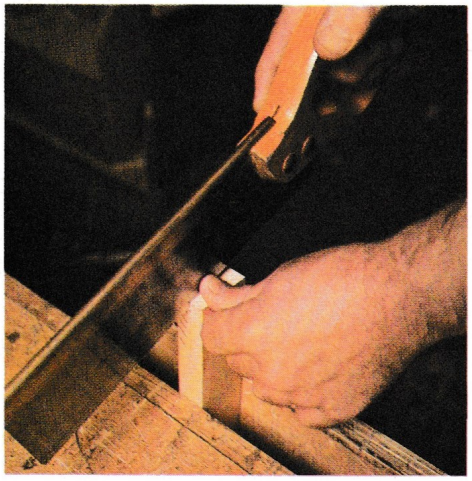
1 Where halving joints are to be assembled in pairs, mark up each pair at the same time so that they come out to the same length

2 To construct a tee halving joint mark out the socket section then mark the shoulder line for the pin on the back of the cross-rail

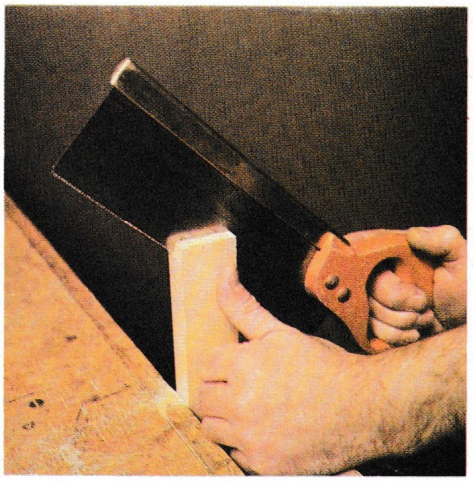


3 Set a marking gauge to half the thickness of the wood and then carefully scribe the depth lines for the socket part of the joint

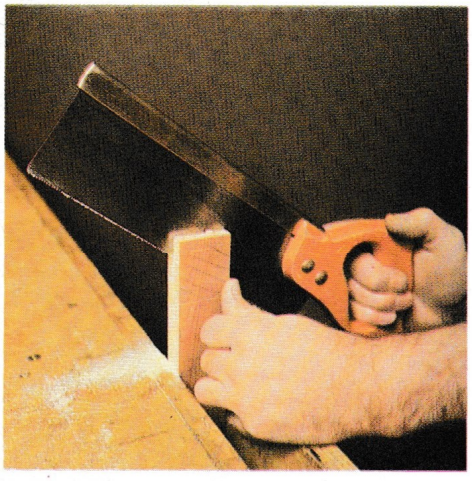
4 Use the marking gauge to scribe thickness lines on the pin, then mark the area of waste onto the pin and socket with a pencil



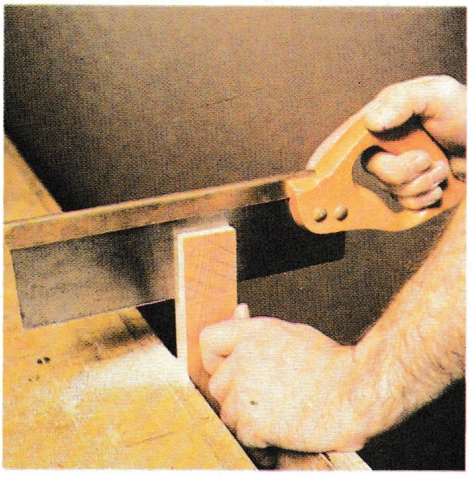
5 To saw the pin, position the wood vertically in the vice and make a notch in the wood by drawing back the blade of the tenon saw



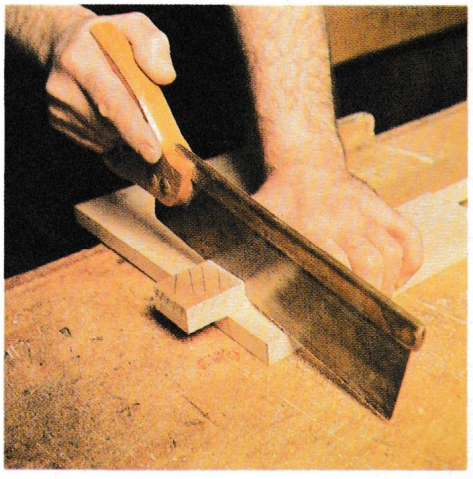
6 When you have cut a notch about 5mm deep in the end of the wood, saw down to the shoulder line on one side of the piece



7 Turn the piece of wood around in the vice, then saw down to the shoulder line on the other side of the pin section



8 Next, hold the saw horizontally and cut down to the shoulder once more to remove the remaining V-shaped piece of wood



9 Hold the wood on a bench hook and cut away the waste wood, taking care not to saw into, and weaken, the neck of the pin

is often employed when the surface has to be moulded (fig. F).

The interlocking parts of a halving joint are known as 'pins' and 'sockets'. The tee halving joint consists of a pin cut in the cross rail and a socket in the side rail into which the pin is fitted. Corner halvings consist of a pin in each member, and cross halvings of two sockets.

Marking up the pieces

Where halving joints are to be fitted in pairs, be sure to mark up each pair of pieces at the same time to make certain that they come out to the same length (fig. 1).

On rough-sawn wood you can mark out the cutting lines in pencil, but for hardwood or softwood furniture you should scribe the lines with a marking knife held carefully against the side of a try square. Bear in mind that the knife leaves quite deep marks in the wood, so mark heavily only the areas you intend to cut or you will spoil the finished appearance of the halving joint.

The procedure for marking up a tee halving joint is as follows:

- Mark the width of the cross-rail across the face of the side rail and half-way down both edges.
- Mark the shoulder line across the back of the cross-rail at a distance from the end about 6mm longer than the width of the side rail (fig. 2). Continue this line across the edges of the wood.
- Set a marking gauge to half the thickness of the pieces of timber. Scribe a short test line on one of the edges, then turn the gauge around and mark the same surface from the other side. If the two marks merge into one, the gauge is set. If not, adjust it until they do.
- With the gauge set correctly, scribe depth lines for the socket part of the joint on both edges of the side rail (fig. 3).
- Gauge the thickness of the pin along the edges, and across, the end of the cross rail, then mark the waste area on both pieces (fig. 4).

Sawing the pin

When sawing the section out of the cross rail to form the pin of a tee halving joint, the 'rip' cut that runs in the same direction as the grain must be made before the cross-cut across the grain.

Place the wood vertically in the vice, in a low position to prevent vibrations which might cause the saw to jump off the wood. Using a tenon saw, make a notch, to the waste side, in the corner of the wood at the far side of the gauge line by drawing the blade of the saw back (fig. 5). Use your thumb to guide the blade and continue sawing gently, letting the saw handle drop slowly until the blade is in the horizontal plane.

When you have cut a groove about 5mm deep in the end of the wood, saw down to the shoulder line on one side of the piece (fig. 6). Afterwards, reverse the wood and, remembering that the waste will have changed sides, saw down to the shoulder line on the other side (fig. 7). Finally, hold the wood vertically in the vice once more and saw out the V-shaped piece of wood left inside the cut (fig. 8).

To make the cross-cut, hold the wood on a bench hook and, cutting to the waste side, remove the waste wood with a tenon saw, taking care not to cut into, and weaken, the neck of the pin (fig. 9).

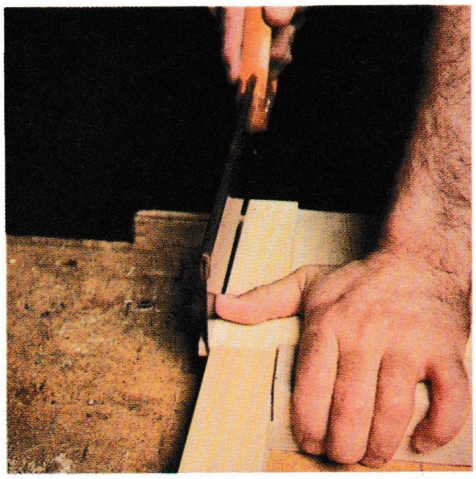
Finish off by clamping the wood horizontally in the vice and cleaning out the angle of the L-shaped cut with a chisel, paring across the grain (fig. 10).

Cutting the socket

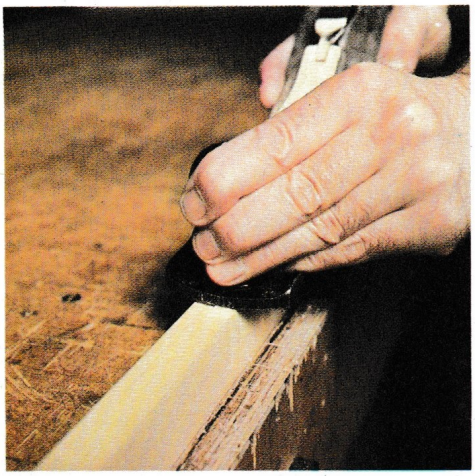
When you have completed the pin section of the joint, hold it temporarily in place on the marked-up side rail to make certain that the measurements for the socket are accurate. Make minor adjustments if necessary.

Secure the wood horizontally in the vice and make a saw cut, slightly to the waste side of each width line, down to the depth line. Pare out the

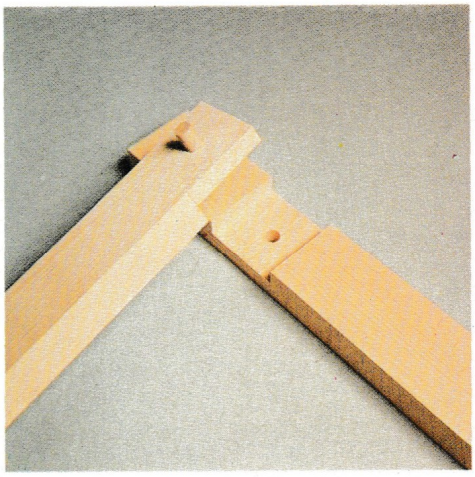
10 *Clamp the wood horizontally in the vice and clean out the angle of the L-shaped cut with a chisel, paring across the grain*



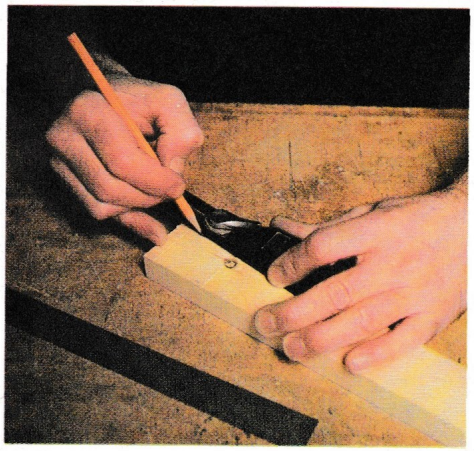
11 *When the socket section of the joint is complete, temporarily assemble the pieces and saw off the excess wood at the end of the pin*



12 *If the fit of the assembled joint is too tight, plane a shaving off the edge of the pin. Take care not to remove too much wood*

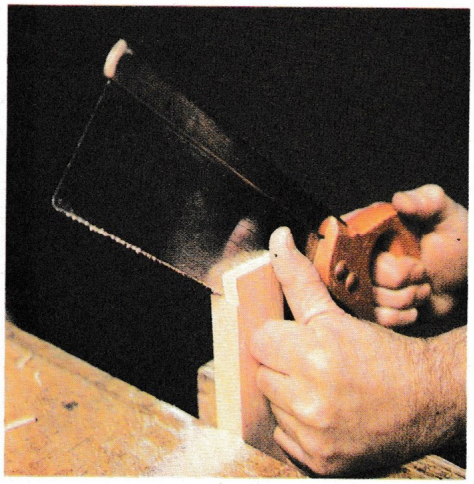


13 *If a particularly rigid finished joint is required, drill through the joint and secure it with a glued dowel peg*

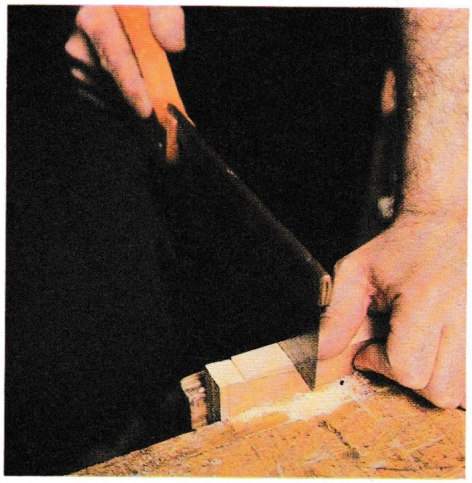


14 *To mark up the sloping shoulders for the pin, use a sliding bevel to obtain an equal angle on either side*

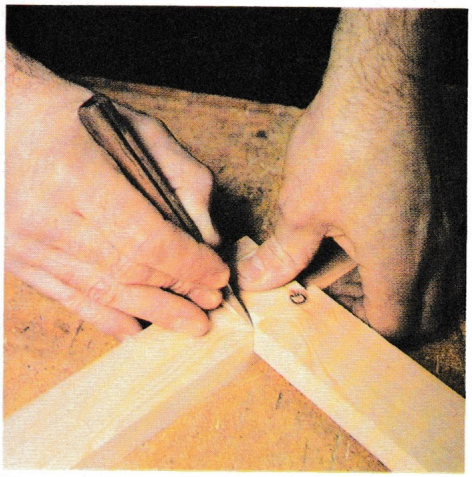
15 *To cut the pin, position the wood in the vice so that one of the sloped lines is vertical and cut down to the shoulder line*



16 *Cut down the other sloping line and then position the wood in the vice sideways. Cut down the halving line*



17 *To complete the pin of the dovetail halving, cut away the wide shoulder and the two wedge-shaped side shoulders*



18 *To mark up the socket section of the joint, place the pin over the other piece and trace the shape with a marking knife*

waste with a bevel edged chisel as described on pages 205-211.

Mark up and cut the pins for corner halvings and the sockets for cross halvings as described above.

Assembling the joint

When you come to assemble the members of a tee halving, you may find that the fit is too tight. In this case, plane a shaving off the edge of the pin rather than trimming the side of the socket.

In addition, you may find that the pin does not bed down sufficiently to produce a flush surface. If this is the case, check that the bottom of the socket and the cut face of the pin are flat. If they are not, use a wide chisel or a flat file to level them. Bear in mind that the joint should, as far as possible, be assembled only once before gluing in place: too many trial assemblies loosens the parts. Before gluing the joint, cut off the excess wood at the end of the pin (fig. 11).

Apply a liberal amount of PVA adhesive to both surfaces to be joined and cramp the joint as described on pages 93-99. To avoid marking the wood, pad the jaws of the cramp with timber offcuts. Before the glue sets, check again that the joint is tight fitting and wipe off any excess adhesive with a damp cloth.

Tee halving joints should be given extra strength by nails or screws (see pages 72-77), or if a particularly rigid joint is required you can drill through the joint and secure it with a glued dowel peg (fig. 13).

Dovetail halving joints

Although more complicated to construct than the tee halving, the dovetail halving is a useful joint because it can withstand sideways tension without being screwed or pegged. Although the construction technique is similar to that for a tee halving, the marking up procedure and the order of cutting are quite different:

- Mark out the shoulder line of the pin around the piece of wood with a try square and marking knife.
- Mark up the sloping lines of the dovetail, using a sliding bevel to obtain an equal angle on both sides of the wood (fig. 14).
- Use the marking gauge to mark the halving lines as above, and pencil mark all the waste areas. Position the wood in the vice at such an angle that one of the sloping lines is in the vertical plane.
- Using the tenon saw, saw down the first sloping line to the shoulder mark (fig. 15).
- Reposition the wood in the vice so that the second line is now vertical and saw down this line.
- Saw down the halving line as described above.
- With the wood held horizontally in the vice cut away the wide shoulder and the two short side shoulders with a tenon saw (fig. 17).
- Clean up the edges and corners of the halved dovetail with a bevel-edged chisel.
- To mark up the shape of the socket section of the joint, place the pin over the other piece of wood and trace the shape of the pin onto the wood with a marking knife (fig. 18).
- Use the marking gauge to score the halving lines onto the edges of the wood and pare out the waste as described above.

Which concrete?

The differences between concrete and mortar ● Getting the right mix for the job ● The importance of getting the moisture content right ● Simple methods for testing consistency ● Buying and storing ingredients

Ray Duns

Below: *The 'squeeze test' is a simple method for testing the consistency of your concrete. The water content is correct when the mix moulds to the shape of your palm without oozing or crumbling when it is too wet or too dry*

Although concrete and mortar are two of the most basic building materials, they often give rise to a great deal of confusion. Deciding on which mix to use and what materials you need is frequently the hardest part of a masonry project.

So before you venture on to more complicated jobs, it is well worthwhile consolidating your knowledge. You can then be sure of perfect results every time.

Concrete

Concrete is a mixture of water and two dry ingredients: a matrix or binder, usually Portland cement, and aggregate. Portland cement comes in 25kg, 40kg and 50kg bags and is either grey or white. The white type is more expensive but gives a better looking finish to the concrete, especially when colour additives are used (see below).

Aggregate is a term about which there is often confusion. Generally, it describes anything from fine sand, through shingle and river gravel, to small pebbles. But when builders speak of concrete 'mixes', they sometimes take the sand separately and call the gravel component 'large aggregate'. Hence a typical concrete mix would be 1 : 2 : 3, meaning one part cement to two parts sand to three parts gravel.

The size of the particles of gravel goes a long way towards determining the exact nature of a particular concrete mix. At the builders' merchants, the most commonly used type contains particles of up to 18mm in size (20mm in Australia) and is variously described as 'coarse aggregate' or '18mm aggregate'. When mixed with sharp sand and cement, it gives a concrete which is suitable for most DIY jobs.

But it is far more convenient for the DIY enthusiast to buy the sand and gravel ready mixed when it becomes known as '18mm all-in ballast' or 'combined aggregate'.

All-in ballast is available in 50kg

Table 1—general purpose concrete mixes

	Portland cement	Sharp sand	Coarse aggregate	Combined aggregate	Applications
MIX A	1 :	2½ :	4		Foundations, drives and floor slabs, fence post setting, any small job which requires a 75mm thickness of concrete or over
	1 :			5–6	
MIX B	1 :	2 :	3		Stronger than Mix A. For paths, pools, steps and jobs calling for a concrete thickness of less than 75mm
	1 :			3.75	

bags but if more than 0.25m³ is required, it is much cheaper to buy it in loose bulk form. When mixed in the proportions of 1 (cement) to 6 (ballast), it gives the ideal general purpose concrete mix for the DIY enthusiast (see table 1).

In the finer mixes of concrete used for some rendering and screeding jobs the large aggregate is replaced by **9–10mm gravel mixed, with sand or** by sharp sand used on its own. At this stage, they are better referred to as mortar mixes.

Water content

The water content of concrete is a critical factor, but one for which there are unfortunately no hard and fast rules for the DIY person. Aggregate is usually damp when you buy it, so it is impossible to generalize.

The most useful rule of thumb is to add only as much water as you need to bind the dry ingredients together. Do this a little at a time, mixing as you go and taking great care not to leave any puddles in the mix.

Of the many tests you can do to find out whether the water content is right, the 'squeeze test' is perhaps the most convenient. Take two handfuls of the mixture and squeeze them tightly into a ball in your hands. If the ball stays together when you open your hands, the mix is about right. If it crumbles, add fractionally more water and try again. If the concrete is slimy and slips through your fingers, you have no choice but to add more dry ingredients.

Concrete additives

Among the additives or admixtures which you can add to concrete are proprietary frostproofers and accelerators. These protect the concrete and **help it to set in cold climate, but must** be used with care or they will ruin the mix completely. Also available are waterproof hardeners. Whatever additives you use follow the manufacturer's instructions carefully.

Try, wherever possible, to avoid concreting in cold weather. If you must, get your builders' merchant to advise you on the right admixture. Follow the manufacturer's instructions carefully when you use it and bear in mind that you will need less water than usual.

Concrete can be coloured by using **a special type of aggregate or cement—only your supplier can advise on this—by adding pigment, or by painting the finished concrete with special colouring dyes which soak the surface.**

Table 2– Mortar mixes

Applications	Portland cement	Non-hydraulic lime	Builders' sand	Sharp sand	Plasticizer	Remarks
External walls and outer	1	1	5–6		×	
leaves of cavity walls	1		5–6		√	
above DPC	1	2	8–9		×	for calcium/silicate
	1		7–8		√	bricks—summer use only
External walls below DPC	1	½	4–4.5		×	
External free-standing walls	1		3–4		√	
Internal walls, inner	1	1	5–6		×	winter or summer
leaf of cavity walls	1		5–6		√	use
	1	2	8–9		×	summer use only
	1		7–8		√	
Copings & sills, also	1	0.25		3	×	
retaining wall and	1	0.5		3–4	√	calcium/silicate bricks
engineering bricks	1	0.5		4–4.5	×	
Parapets and domestic	1	1	5–6		×	
chimneys (rendered)	1		5–6		√	
	1	2	8–9		×	calcium/silicate bricks
	1		7–8		√	summer use only
Parapets and domestic	1	0.25	3		×	winter use only,
chimneys (not rendered)	1	1	5–6		×	not calcium bricks
	1		5–6		√	
Joints for paving	1		3–4		√	use fine sand
Bedding for paving	1			3	×	large and small slabs
	1			3–4	×	to take light traffic
		1		8	×	large slabs pedestrian
	1			10	×	traffic only

Above: *Typical mortar mixes for various applications. The figures refer to the proportions of each ingredient used. A tick in the plasticizer column indicates that the use of this additive is permissible*

Calculating quantities

When you are concreting, it is vital to have an adequate supply of materials with you: there is nothing more annoying than having to stop half way **through a job in order to buy more.**

Begin by finding out the volume of mixed concrete you need. This is simply done by multiplying the area to be concreted by the depth of concrete required and adding on about 10 percent for wastage. For example, on a drive 6m x 3m, the area is 18m². If it is to be covered to a depth of 100mm you get 1.8m³ (18m² x 0.1m). Adding on 10 percent for wastage gives you a final requirement of about 2m³.

If the area is irregularly shaped,

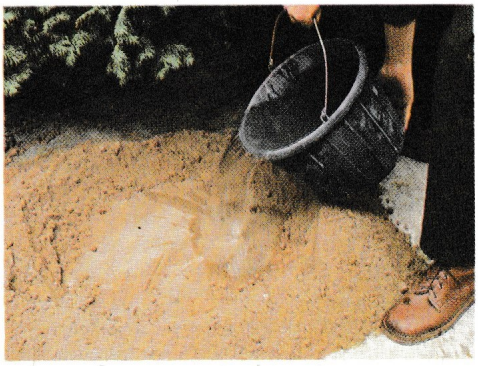
1 *Start the hand-mixing sequence by adding cement to the coarse and fine aggregate. Try and keep the ingredients together*

draw a scale plan of it on graph paper. Find out the area of one square, multiply this by the number of whole squares then make an estimate on the area covered by the part-squares. Be generous in your estimates: remember that it is better to have too much

Applications	Portland cement	Non-hydraulic lime	Builders' sand	Sharp sand	Plasticizer	Remarks
Pointing for brickwork	1		2		×	engineering bricks
	1	2	8		×	other bricks
	1		4		✓	
Floor screeds	1			3	×	waterproofer/hardener may be added
Insulating floor screed	1				×	6 parts vermiculite (50kg cement + 2 × 110 litre bags vermiculite) lay 36–50mm thick
Topping screed for vermiculite substrate	1			4	×	
Repairing flaunchings	1	1		6	×	
round chimney pots	1			3	×	
Rendering, internal first coat	2		3	3	✓	change plasticizer for waterproofer/hardener to prevent damp
subsequent coats	2		6	6	✓	
Internal walls all coats	2		6	6	✓	
	1	2	4.5	4.5	×	
Rendering, external first coat	2		3	3	×	plus waterproofer/
subsequent coats	2		4.5	4.5	✓	hardener
Hard brick	1	2	4.5	4.5	×	

NB If colouring is added, a different mix may be required; follow colour manufacturer's instructions exactly.
Where alternative proportions of sand are given they refer to the grade of sand used. Use lower limit if sand is either coarse or fine, higher if sand is evenly graded.

2 Mix the dry ingredients thoroughly using a suitable spade. Fold the mix over as you add from the edge to the middle



3 Form a crater in the dry pile and add most of the water. Until you have some experience of mixing, add this in stages

concrete than too little. Use any residue for odd repairs.

Having decided on your volume requirement, refer to table 2. This shows what quantities of dry ingredients you need to make up a specific volume of mixed concrete.

Buying concrete

Mixing concrete by hand is an extremely laborious business and for quantities of over 1m³, it is rarely worth the effort. This may leave you with three options: to hire a small concrete mixer, to order the concrete ready-mixed or to employ a specialist company to mix the concrete for you.

4 Mix the material to an even consistency and colour, again folding edge mix into the centre so all the dry mix is used

5 Use a sprinkling water can to add water—very gradually—until the consistency and workability seems right

Ordering concrete ready-mixed saves you a lot of effort on really large jobs but most firms specify that you take a minimum of about 7m³. Bear in mind that you will need access on-site for the lorry—and plenty of assistance to help lay the concrete quickly once it has been delivered. When you make your order, specify what you want the concrete for: the firm will then supply you with their most suitable mix.

For quantities between 1m³ and 7m³ the choice is between hiring a mixer and getting a firm to mix the concrete for you on-site. The latter is preferable if there is a firm offering this service in your area and if you have enough room for their lorry. As with ready-mixed concrete, materials and advice on which mix to use both come as part of the service.

Though mixers can be hired quite cheaply from plant hire shops, using

6 *If a boot leaves a lasting impression in the mix—without oozing or crumbling—the mix is at the correct consistency*

7 *Test the workability of mortar for blockwork by seeing if it sticks to a metal float when this is held upside down*

8 *The 'squeeze test' for checking the consistency of concrete—the mix on the left is too wet, that on the right is too dry*

this method involves you in buying and arranging transport for your own **supply of materials.**

In the end, your choice must be based not only on how much concrete you need but also on the logistical difficulties of buying, transporting and storing it. And this is something you need to think about carefully in **advance of making a decision.**

Whether you are buying your own materials or ordering ready-mix, be sure to tell the supplier what you want them for. All forms of aggregate—both sand and ballast—vary widely from area to area, so your supplier will advise on the most suitable materials he has in stock. Also, remember that the larger the supplier the more likely you are to get what you want.

Storing cement

Cement deteriorates if it is stored for any length of time, so buy it in batches as required. Whether you store it indoors or outdoors, it is important to keep the cement dry and off the ground. If possible, make a timber platform and store the bags flat on this. If it is stored outdoors, keep the cement well covered with plastic **sheeting to avoid any possibility of rainwater getting to it.**

Keep batches separately so that old stock can be used first. Once opened, a bag of cement should be used as soon as possible. If you do have to store an opened bag, keep it in a large, dry, heavy-duty plastic bag. Never store cement next to lime or gypsum plaster.

Additions to concrete such as plasticizer are long-lasting but should be stored safely.

Mortar

Mortar differs from concrete in that it contains none of the heavier forms of aggregate such as ballast. It is simply a mixture of cement and sand.

Older forms of mortar used lime, instead of cement, to bind the sand together. This produced a flexible mortar which could take up quite large settling movements without cracking, but which had little resistance to the weather.

Cement-based mortar is much more robust. The addition of a small amount of lime or plasticizer to some mixes (see table 2) improves their flexibility and makes them easier to work with.

The cement used in mortar is Portland cement. For bricklaying and related jobs, this is mixed with a soft sand such as builders' sand. For rendering and screeding mortars, washed sharp sand is used instead.

Where lime is specified in the mix (see table 2), you may have a choice between hydraulic and non-hydraulic lime. The majority of bricklaying jobs call for the latter, which is dry or slaked and needs plenty of air around it if it is to set properly. Hydraulic lime sets under water and is therefore used in thick walls or structures which retain some moisture.

For smaller DIY jobs, the dry ingredients of several mortars are available premixed in bags. Your supplier will advise you on the suitability of a particular mix if you tell him what you want it for.

As with concrete, pigments are available which colour the mortar. These are particularly useful for jobs such as repointing, where they can be used to match the mortar to the colour of the surrounding brickwork.

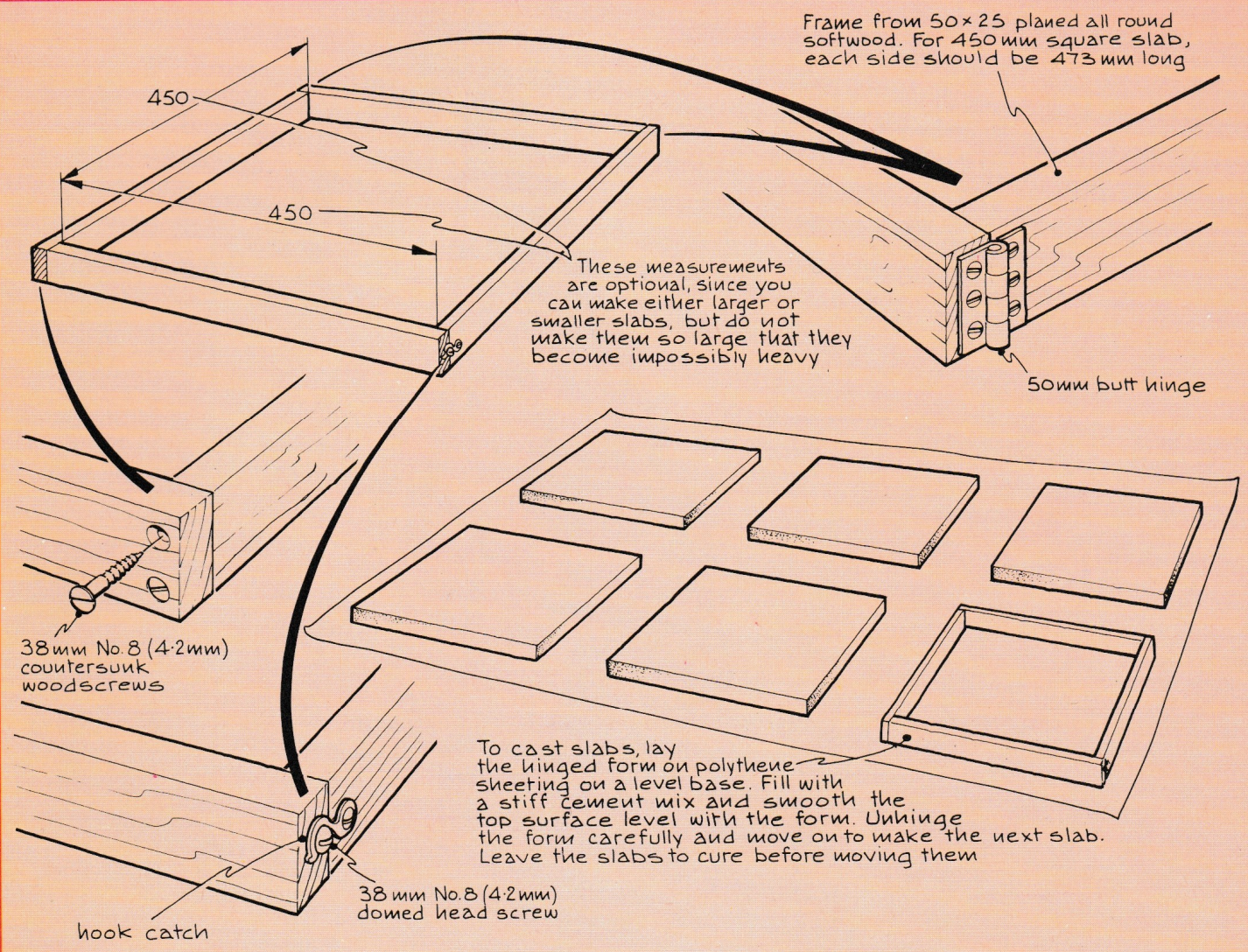
Mixing mortar

Mix mortar in the same way you would concrete: the dry ingredients first, then the water. Like concrete, **the water content of mortar is always** the most critical factor.

For bricklaying and rendering, add enough water to bring the mortar up to the consistency of thick cream. Pick a little up on your trowel, give a sharp upward shake, then turn the trowel over. If the mortar sticks to the trowel, it is of about the right consistency for ordinary bricks. For heavy block work and engineering bricks, the mix should be slightly thicker. Always bear in mind that if you are adding plasticizer to the mortar, slightly less water will be **needed to reach the right consistency.**

Flooring screed mixes require considerably less water. In this case, use the 'squeeze test' described above for concrete.

9 *There is quite a difference in the appearance of mortar (below) and concrete. The latter is used for heavy-duty and coarse work*


Frame from 50×25 planed all round softwood. For 450mm square slab, each side should be 473mm long
450
450
These measurements are optional, since you can make either larger or smaller slabs, but do not make them so large that they become impossibly heavy
50mm butt hinge
38mm No.8 (4·2mm) countersunk woodscrews
To cast slabs, lay the hinged form on polythene sheeting on a level base. Fill with a stiff cement mix and smooth the top surface level with the form. Unhinge the form carefully and move on to make the next slab. Leave the slabs to cure before moving them
38mm No.8 (4·2mm) domed head screw
hook catch

Make your own paving stones

Casting your own paving slabs is quite easy, and allows you to choose whatever texture or colour you want.

Make a simple hinge-apart frame like that shown. Use a stiff concrete mix that will stand up on its own without slumping. Make up enough mix for all your slabs, and cast them one after the other on a polythene sheet on a level smooth surface.

To cast coloured slabs, add concrete pigment to the mix—you will get a better colour if you use white cement.

Allow the slabs to cure fully before moving them. You can then lay the slabs on compacted sand or mortar to form a colourful path.

Advertising Arts

Roof safety

Regulations and safety procedures ● Using ladders safely ● Fixing a roof ladder ● Erecting tower scaffold ● Working safely and securely with tools on the roof

Before attempting any work—however minor—on a roof, there are certain precautions which you must take.

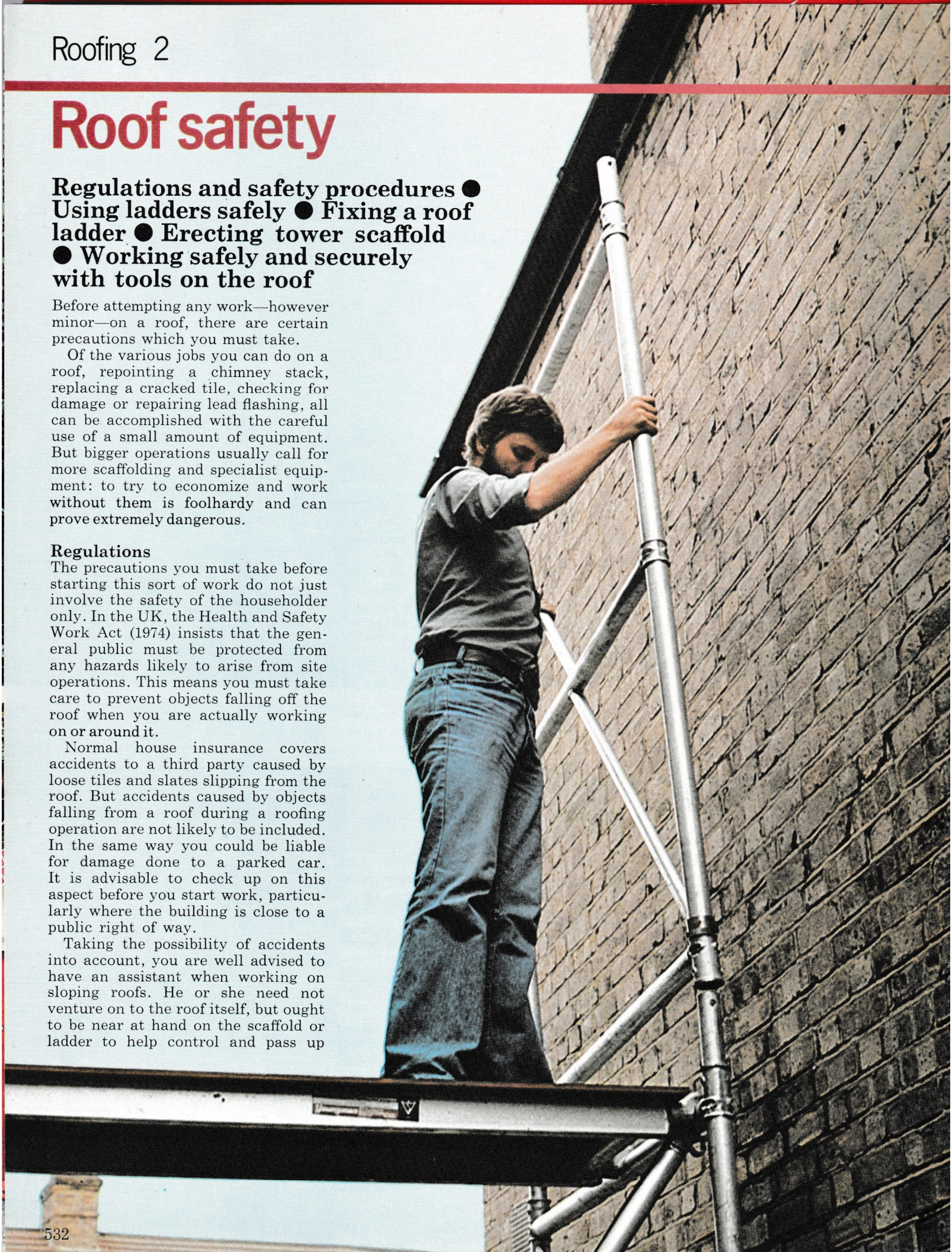
Of the various jobs you can do on a roof, repointing a chimney stack, replacing a cracked tile, checking for damage or repairing lead flashing, all can be accomplished with the careful use of a small amount of equipment. But bigger operations usually call for more scaffolding and specialist equipment: to try to economize and work without them is foolhardy and can prove extremely dangerous.

Regulations

The precautions you must take before starting this sort of work do not just involve the safety of the householder only. In the UK, the Health and Safety Work Act (1974) insists that the general public must be protected from any hazards likely to arise from site operations. This means you must take care to prevent objects falling off the roof when you are actually working on or around it.

Normal house insurance covers accidents to a third party caused by loose tiles and slates slipping from the roof. But accidents caused by objects falling from a roof during a roofing operation are not likely to be included. In the same way you could be liable for damage done to a parked car. It is advisable to check up on this aspect before you start work, particularly where the building is close to a public right of way.

Taking the possibility of accidents into account, you are well advised to have an assistant when working on sloping roofs. He or she need not venture on to the roof itself, but ought to be near at hand on the scaffold or ladder to help control and pass up



tools and materials. This increases the safety factor and gets round the need for one person to laboriously climb up and down ladders.

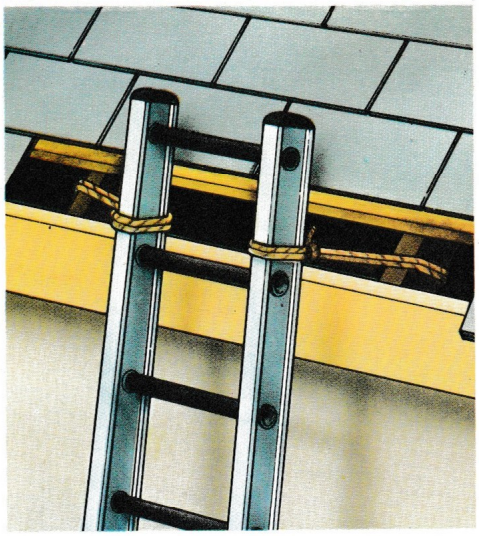
In view of the necessity for stringent safety precautions, you should not attempt a major job such as a complete retiling or reslating without all-round scaffolding. The development of the plant hire business now makes it economical to hire even quite large amounts of scaffolding. Complete instructions on how to build all-round scaffolding are given in detail in Part 4 of the roofing course.

Using ladders

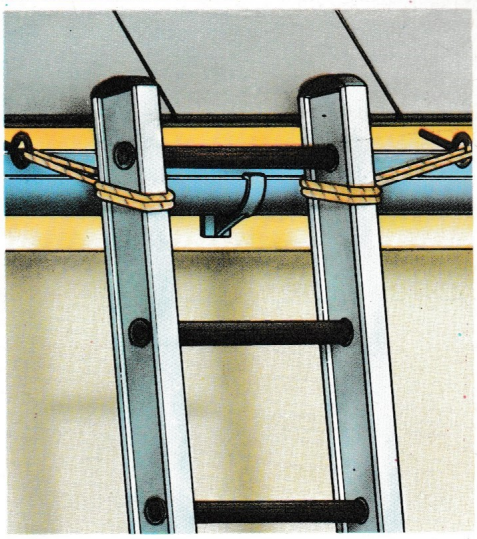
Aluminium ladders are ideally suited to roof work because they are light and easy to handle. The extension-type aluminium ladder is also very convenient for storing and manoeuvering in awkward places around the house. If repairs only are required, they can be safely carried out with a ladder from the ground and a 'crawler' ladder laid on the slope of the roof (see fig. 19).

The assistant is indispensable in this case, standing on the bottom rung of the ladder with a firm hand on each side while it is being raised to a vertical position.

Ladders set against the roof should be placed at an angle of approximately 75 degrees. A simple way of working out the angle is to calculate the distance from the ground up to the eaves guttering and then divide this distance by four. The result gives you the distance which the base of the ladder should be from the wall. Remember when you do this to make allowance for any projection of the eaves from the wall face.



A. *The top of a ladder should be tied to the rafters of a house if a number of roof tiles are removed*

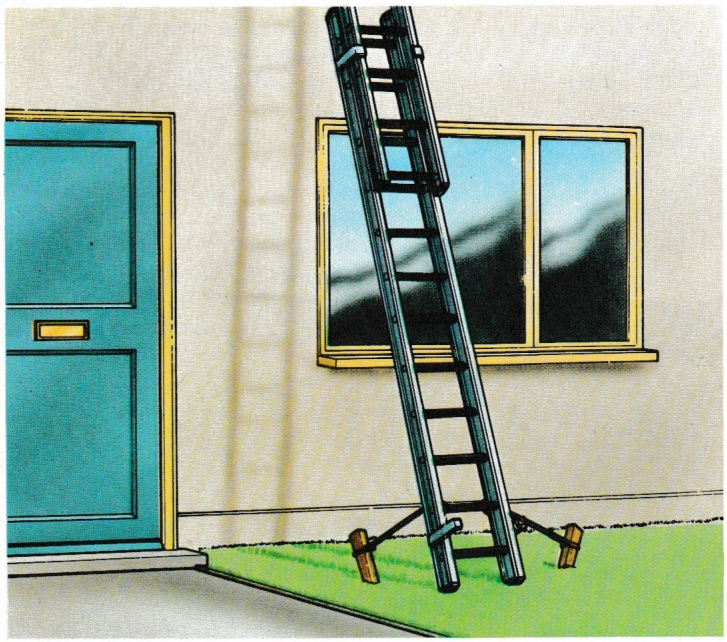


B. *Two screw-eye fixings on the eaves can be used to secure the top of a ladder with rope*

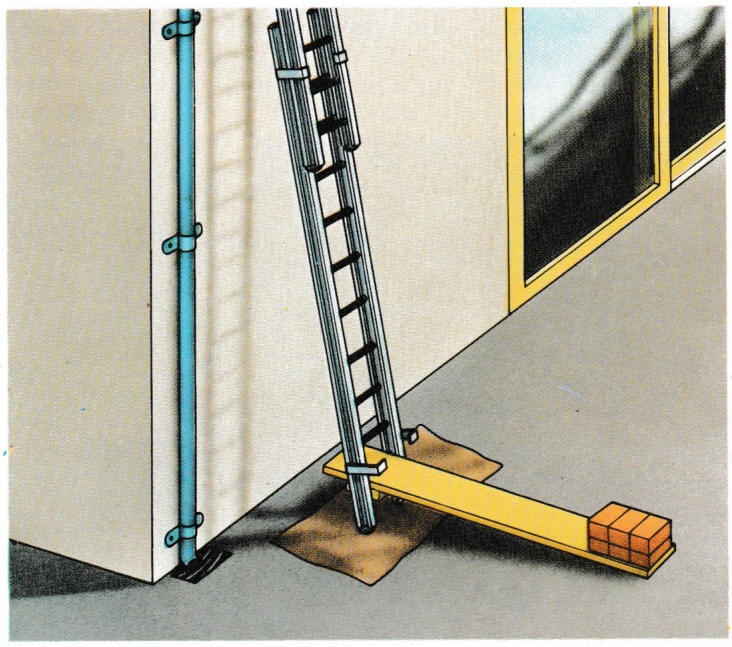
The top of the ladder should extend about 1m above the eaves, enabling you to keep hold of the ladder until you are firmly positioned on the roof or scaffold. As soon as the ladder is rested against the eaves gutter, it must be secured at the top and preferably also at the base.

The top fixing can be done in one of two ways. One is to remove some tiles or slates just above the guttering to expose the battens and rafters; you then lash the top of the ladder to the rafters with strong sash cord. The main disadvantage of this method is that the removed slates or tiles create a problem in bad weather, though a piece or pieces of felt or old linoleum slipped under the tiles above the affected area will divert rain water away from the hole.

The second, more commonly used method involves tapping or 'sounding' the fascia board to determine the



C. *On soft ground the bottom of a ladder can be fixed using two pegs to lash the foot of the ladder in place. Place the pegs between the ladder and the wall*

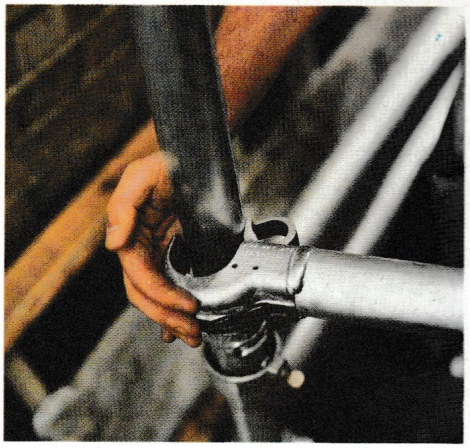


D. *On smooth surfaces, such as tiles, weigh the bottom rung of the ladder down with bricks laid on top of a board. Sacking will prevent the ladder from slipping*

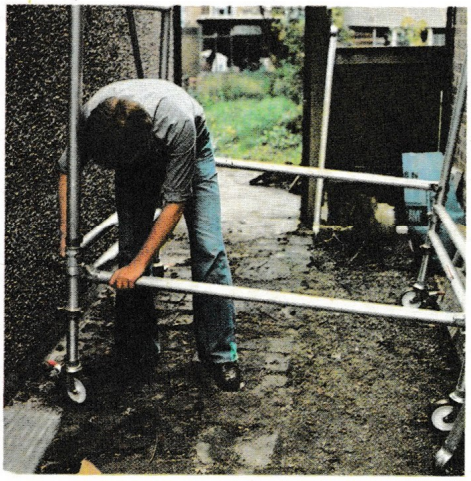
Haywood Art Group

1 *To erect a tower scaffold start by attaching the master rung to the bottom of the two main frames. Securely fix the interlocking clips*

2 *Insert the two adjustable leg castors into each main frame. Lock the castors to prevent movement when building the scaffold*



3 *At each end of the braces there are locking claws. These must be primed before use by pulling back the trigger*

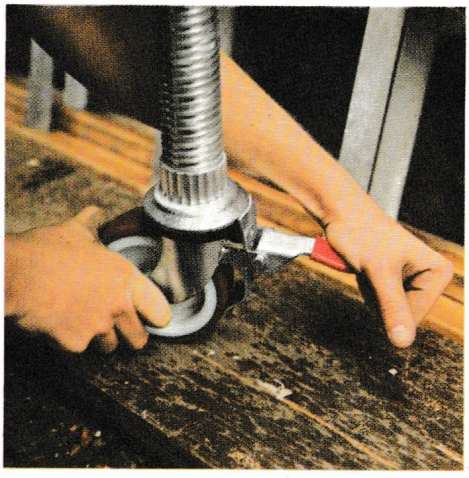


4 *Clip a brace onto each side of the main frame. Clip one brace onto the side and the other across the master rungs*

5 *Attach a long diagonal brace to one side of the structure. This should be at the opposite side to where the ladder will be fixed*

6 *Clip the stairway to the tower in an opposite direction to the diagonal brace and position the first platform on top*

7 *Adjust the four legs to level the tower. Check this by placing a spirit level along each of the base frames and alter as necessary*



8 *Make sure that each of the wheels are securely locked. On soft ground the wheels should be rested on boards*

position of the rafter feet—quite often nails are tell-tale signs—which are used as anchor points.

Where a nail is visible or you hear a dull thud, make a hole in the fascia with a gimlet or bradawl and screw in a large No. 14-18 screw-eye or screw-hook. It is best to have two of these, one on each side of the ladder.

When the hooks are in place, use strong sash cord—not clothes line—to secure the ladder to the hooks. And when you tie the rope, finish each complete lap wound round the ladder with a half-hitch. This ensures that if the rope breaks, the whole fastening is not loosened.

Where the eaves guttering is made of plastic, the gutter tends to bend under the weight of the ladder and its user. You can avoid this by placing a piece of wood the same width as

9 *Construct the second lift of frames like the first, making sure that the diagonal brace, stairway and platform are in place*

10 *In order to stabilize high scaffolding fit outriggers to any tower scaffold which has a height of 3.5 metres or over*

11 *Fix the top platform in place and then secure the two guard rail frames. Take great care when working at this height*

12 *Clip the guardrails around the top of the platform. Make sure that they are securely fixed in place for safety reasons*

13 *Fit toeboards in place around three sides of the bottom platforms and around the four sides of the working platform*

14 *Properly fitted toeboards prevent tools falling over the edge accidentally and ensures a firm footing on working surfaces*

the gutter inside it to act as a filler.

If you are placing the ladder on soft ground, push the sides about 100mm into the ground—enough to stop movement at the base. Alternatively, some large tent pegs driven into the ground, between the ladder and the wall, make a good fixing to which you should lash the ladder (see figs A to D). On paved or concrete bases, place a bag of soil or debris against the base of the ladder to stop it from slipping outwards. Take special care when placing ladders on smooth pavings, especially if they are at all wet or frosty. An old sack laid under the feet of the ladder does much to stop it slipping. Again try to arrange some sort of fixing to which the bottom of the ladder can be lashed. Alternatively have someone stand on the bottom rung of the ladder.

15 *A trap door fitted to one side of the top platform allows easy access to the work area. Always ensure that it is firmly closed*

16 *A properly constructed scaffold will allow you to work safely at roof level, but make a regular check that all joints are secure*

Erecting a tower scaffold

If you are considering a roofing project which may take a long time, such as re-tiling a whole roof, then building a scaffold tower is a good idea. A tower may take longer to erect than a ladder but it is far more convenient and provides a much safer work base.

You can construct your own tower using scaffolding tubes and couplers but it is more usual and quicker to build a frame-type scaffold. Most hire shops supply these in sections so that you can construct the tower to your own requirements. Putting the sections together provides a safe working platform to a height of between 4 and 6 metres.

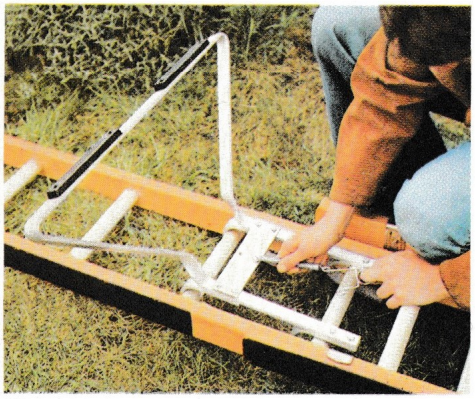
Some sectional scaffolding towers are arranged on wheels so that they can be moved around more easily. This is convenient if the ground around your home is level. The wheels usually have a locking device, so make sure that the wheels are firmly locked before you start work.

Rigid safety standards are important when working with scaffolding. The top of the scaffold should have a secure platform on which to work and this should be fitted with toe boards and guard rails to avoid accidents.

If the height of the tower exceeds three times the length of the shortest base measurement then the tower should be tied to the side of the roof or outriggers attached to the bottom of the structure.

Guard rails are a very important safety precaution, as is the necessity of making the platform close-boarded to the wall to stop debris falling and to give the scaffold more rigidity.

When you have finished the job and cleared the scaffolding, take care to sweep away all the dust and debris from the roof slopes and clean out all the water-courses. The swan neck common to most guttering systems (see page 50) is particularly prone to blockages. A few knocks on the outside with a hammer handle should dislodge any loose debris.



17 *To erect a roof ladder first fit the wall ladder with a stay on a rung which allows it to rest just under the eaves*

18 *Balance the roof ladder on your shoulder. Carry it up to the roof with great care while holding on to the other ladder*

19 *When you reach the eaves push the roof ladder up to the ridge on its wheels. Take care not to damage the slates*

20 *When the head of the roof ladder reaches the ridge turn it over carefully. Hook the irons over the ridge and secure it firmly*

Roof ladders

The ladder which you lay on the roof slope is sometimes known as a 'crawler', probably because you climb it on all fours. A crawler can be an ordinary short ladder or the butt end of an old one. Alternatively you can use a length of board (free from large knots) about 228 × 38mm, with battens screwed to it at regular intervals to form a 'duck run'. In all cases a stronger block of wood, about 100 × 50mm, must be screwed to the top edge to clip over the ridge of the roof.

With demands for greater safety on roofs, a new crawler has been patented consisting of two large steel loops attached to a strong ladder. The loops hook over the ridge of the roof and take a firm hold on the opposite slope. Two small rubber-tyred wheels attached to the other end allow the crawler to be manoeuvered without upsetting the tiles. Although the patented crawler does not give you any more protection from falling off the roof, it is a lot more secure and re-assuring to work on.

When working on roof ladders you should enlist the extra security of a strong rope or tape tied to a safety belt and secured to some permanent feature such as the chimney stack. You should only use a purpose made safety rope or tape and harness belt. These are available from many hire shops. Make sure you know how to tie the correct knots.

Safety with tools

A great many accidents are caused by tools falling from the roof during repairs. It is sound practice to have a box with you on the roof slope to accommodate tools and nails not in immediate use. Using a box allows you to see readily what is at hand inside. Rather than leaving it loose, tie the box to the crawler at a convenient place.

For smaller repairs you can fix a pouch-like bag—rather like the open pocket in a decorator's apron—around your waist. This is obtainable at a builder's merchants and is the perfect way of carrying a few essential tools.

Along the same lines, some types of bib and brace overalls are now fitted with loops and large pockets for storing special tools. And some ex-service clothing is fitted with just the type of pockets and loops which are useful when you have your hands full.

Knees tend to get heavy treatment when you work on roofs, so it is worth getting special padded knee protectors to relieve the discomfort.

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Where to buy it—UK

Built-in wardrobe Pages 516-521
Wardrobe and cabinet fittings from: Woodfit Ltd., Whittle Low Mill, Chorley, Lancs. PR6 7HB

Which concrete? Pages 527-531
For advice on local suppliers of ready mixed concrete contact: British Ready Mixed Concrete Assn., Shepperton House, Green Lane, Shepperton, Middx. TW17 8DN
Further advice on admixtures from: Cement Admixtures Assn., Dickens House, 15 Tooks Ct., London EC4A 1LA; Cement and Concrete Assn., Wexham Springs, Slough, Berks. SL3 6PL
Cement colouring from:
UBM Group Ltd., Group Head Office, Avon Works, Winterstoke Rd., Bristol, Avon, BS99 7PL (branches throughout UK)

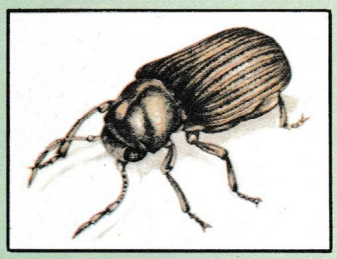
Roof safety Pages 532-536
Equipment shown available on hire from most hire shops. To purchase, contact: S.G.B. Group Ltd., 23 Willow Lane, Mitcham, Surrey

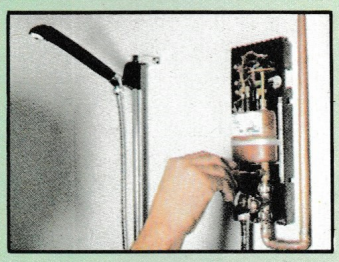
Acknowledgements

Which concrete? Pages 527-531
Information supplied by The Cement and Concrete Assn., Wexham Springs, Slough, Berks. SL3 6PL

Roof safety Pages 532-536
Youngman. Easi-Build access towers and ladders supplied by Hire Service Shops Ltd., Warenne House, London Rd., Reigate, Surrey. W.C. Youngman Ltd. and Hire Service Shops Ltd. are both part of S.G.B. Group Ltd., 23 Willow Lane, Mitcham, Surrey

In next week's issue





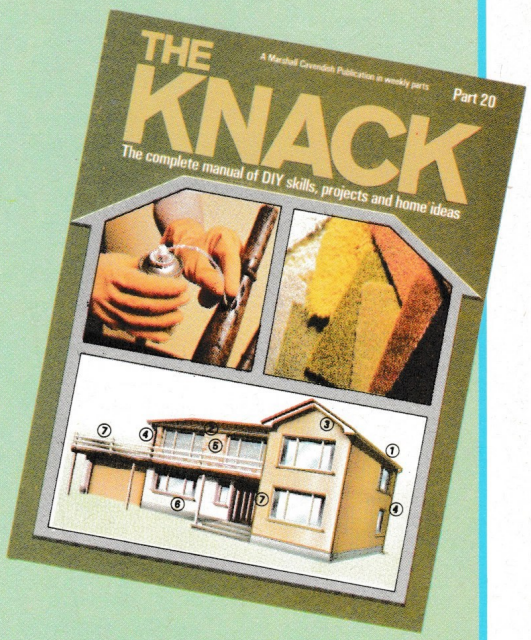
Choosing carpets: As carpets are among the most expensive furnishing items you will ever buy, you need to know exactly what is available before you commit yourself. Home designer draws some interesting conclusions about which types of carpet work out cheapest in the long run

Woodworm: This problem is not just confined to old churches and rickety antique furniture—almost any home is at risk. We show how to deal with woodworm before it is too late

Planning a shower: Shower installation is a job which requires careful planning if problems are to be avoided later. We deal with all the major considerations—positioning, drainage, water supply—and fit a typical example

A chest of drawers: Our featured project gives plans for a modern-look version of this traditional storage unit. The design incorporates an unusual treatment for the door fronts and the chest itself is built in sturdy oak

Exterior painting: We show how to keep your pipes and outside woodwork in good order and offer some useful advice on what time of year is best to repaint it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The complete manual of DIY skills, projects and home ideas

WINDOW SILL GARDENS

Above: In summer, a window box filled with cheery bedding plants is one of the easiest and cheapest ways of brightening up a dreary house exterior. Window boxes really come into their own in midsummer and with such a wide range of plants to choose from, there are planting schemes to suit every situation. In the planting shown here, French marigolds, petunias, ageratum, and a trailing ivy-leaved pelargonium are grouped closely together to achieve a really colourful effect

Above: Window boxes need not remain empty for the rest of the year. This year-round planting makes use of shrub plants like dwarf conifers, cotoneaster, and heather with aubretia and sempervivums added

Right: Early flowering bulbs are a welcome sight in the spring and once the blooms have faded, you can replace them with the kind of summer planting shown above